# 2012 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2012 - 5/31/2013

HERD: MD207 - PAINTROCK

HUNT AREAS: 41, 46-47 | PREPARED BY: TOM EASTERLY

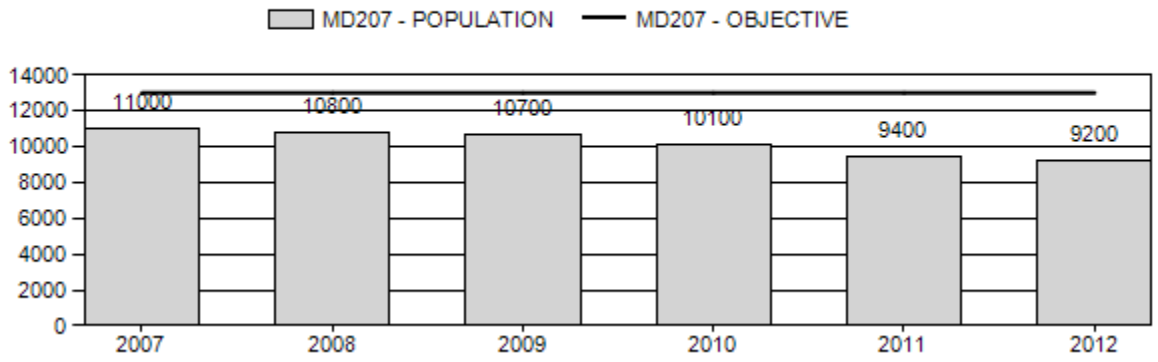
| | 2007 - 2011 Average | 2012 | 2013 Proposed |
|---|---|---|---|
| Population: | 10,400 | 9,200 | 8,900 |
| Harvest: | 1,037 | 833 | 720 |
| Hunters: | 1,731 | 1,612 | 1,400 |
| Hunter Success: | 60% | 52% | 51% |
| Active Licenses: | 1,877 | 1,700 | 1,500 |
| Active License Percent: | 55% | 49% | 48% |
| Recreation Days: | 7,722 | 7,415 | 6,500 |
| Days Per Animal: | 7.4 | 8.9 | 9.0 |
| Males per 100 Females | 27 | 27 | |
| Juveniles per 100 Females | 58 | 62 | |

| | |
|---|---|
| Population Objective: | 13,000 |
| Management Strategy: | Recreational |
| Percent population is above (+) or below (-) objective: | -29.2% |
| Number of years population has been + or - objective in recent trend: | 12 |
| Model Date: | 3/1/2013 |

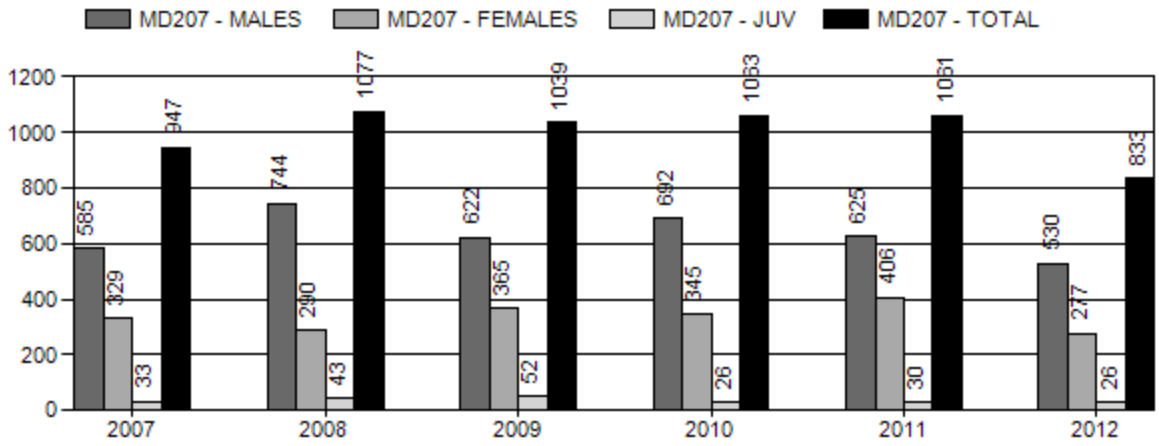
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

| | JCR Year | Proposed |
|---|---|---|
| Females ≥ 1 year old: | 5.9% | 4.4% |
| Males ≥ 1 year old: | 30.0% | 28.5% |
| Juveniles (< 1 year old): | 0.9% | 0.7% |
| Total: | 8.2% | 7.4% |
| Proposed change in post-season population: | -1.7% | -3.0% |

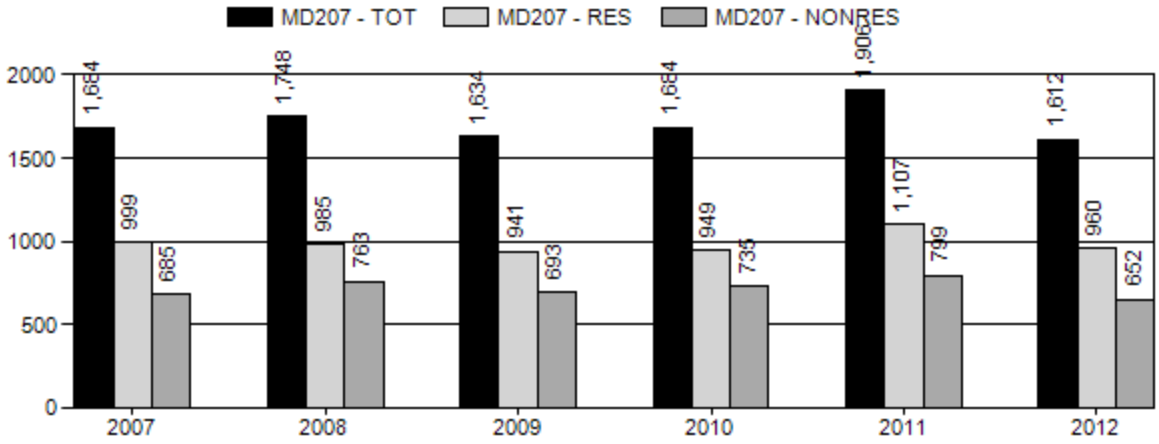
## Population Size - Postseason



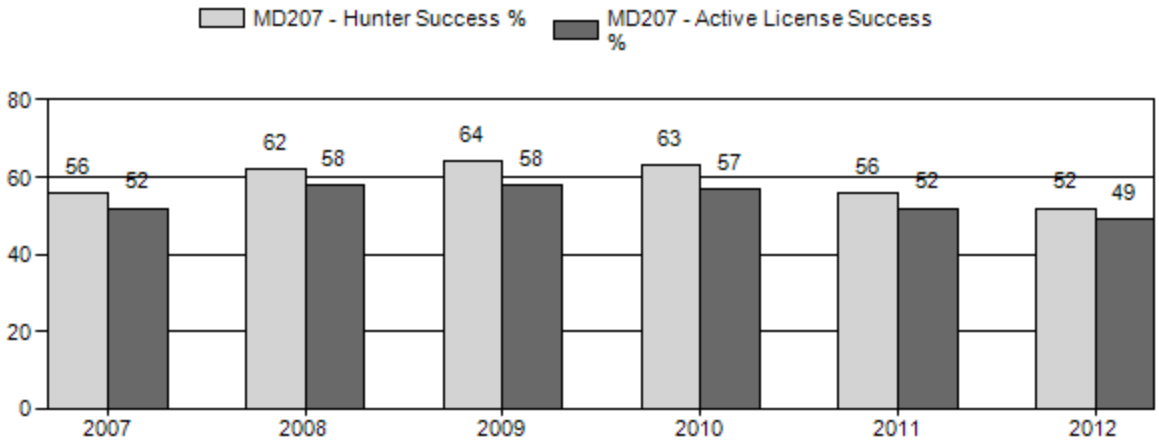
# Harvest



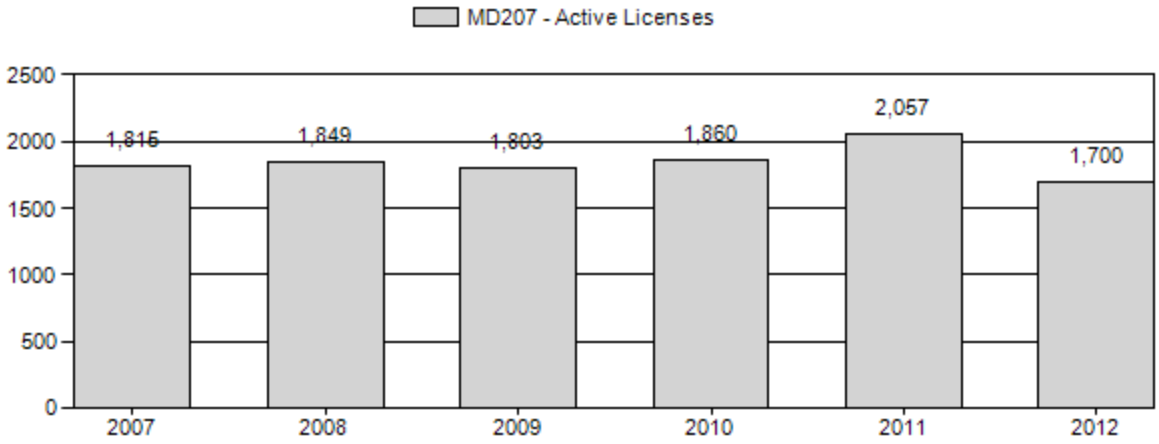

# Number of Hunters



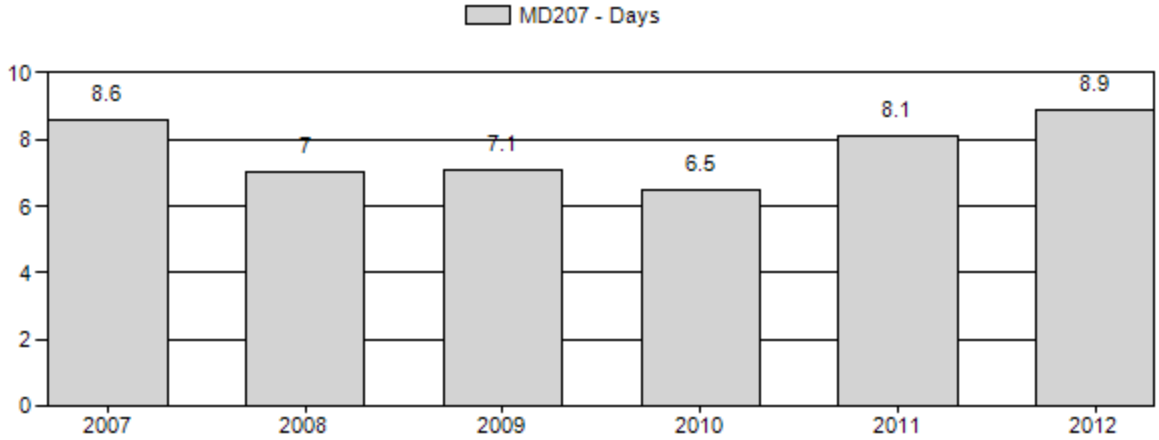

# Harvest Success



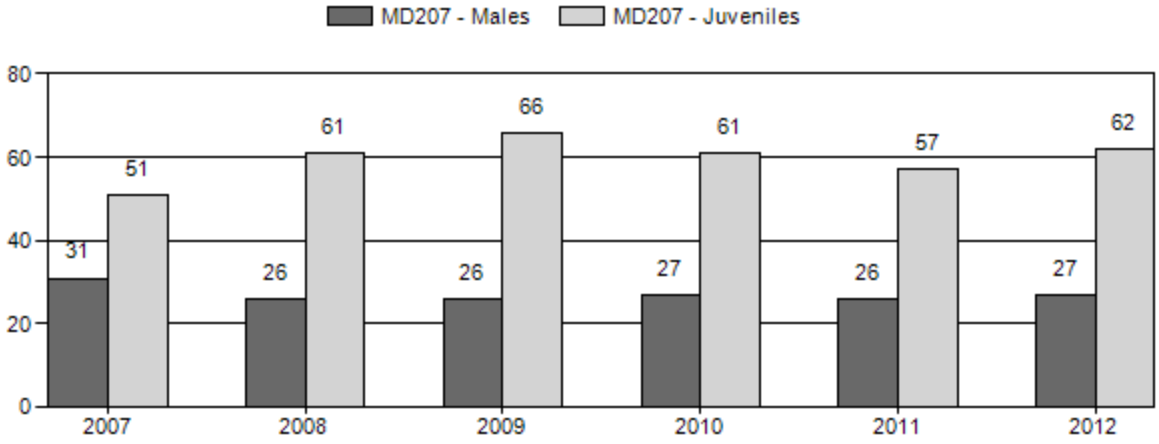
# Active Licenses




# Days per Animal Harvested




# Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD207 - PAINTROCK

| Year | Post Pop | MALES | | | | FEMALES | | JUVENILES | | Tot Cls | Cls Obj | Males to 100 Females | | | | Young to | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ylg | Adult | Total | % | Total | % | Total | % | | | Ylng | Adult | Total | Conf Int | 100 Fem | Conf Int | 100 Adult |
| 2007 | 11,000 | 163 | 320 | 483 | 17% | 1,574 | 55% | 808 | 28% | 2,865 | 853 | 10 | 20 | 31 | ± 2 | 51 | ± 2 | 39 |
| 2008 | 10,800 | 107 | 152 | 259 | 14% | 993 | 54% | 604 | 33% | 1,856 | 1,067 | 11 | 15 | 26 | ± 2 | 61 | ± 4 | 48 |
| 2009 | 10,700 | 91 | 176 | 267 | 13% | 1,040 | 52% | 689 | 35% | 1,996 | 1,210 | 9 | 17 | 26 | ± 2 | 66 | ± 4 | 53 |
| 2010 | 10,100 | 121 | 180 | 301 | 14% | 1,121 | 53% | 682 | 32% | 2,104 | 1,058 | 11 | 16 | 27 | ± 2 | 61 | ± 3 | 48 |
| 2011 | 9,400 | 84 | 193 | 277 | 14% | 1,078 | 55% | 612 | 31% | 1,967 | 1,209 | 8 | 18 | 26 | ± 2 | 57 | ± 3 | 45 |
| 2012 | 9,200 | 87 | 147 | 234 | 14% | 877 | 53% | 542 | 33% | 1,653 | 1,060 | 10 | 17 | 27 | ± 2 | 62 | ± 4 | 49 |

## 2012 Postseason Classification by Hunt Area

for Mule Deer Herd MD207 - PAINTROCK - Hunt Area ALL

| Area | Males | | | | Females | | Juveniles | | Total | Cls Obj | Males/100 | | | Young/100 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ylg | Adult | Total | % | # | % | # | % | | | Ylg | Adult | Males | Female | Adult |
| 41 | 15 | 24 | 39 | 12% | 184 | 59% | 91 | 29% | 314 | | 8 | 13 | 21 | 49 | 41 |
| 44 | 6 | 6 | 12 | 10% | 62 | 54% | 41 | 36% | 115 | | 10 | 10 | 19 | 66 | 55 |
| 45 | 11 | 14 | 25 | 9% | 160 | 59% | 88 | 32% | 273 | | 7 | 9 | 16 | 55 | 48 |
| 47 | 25 | 47 | 72 | 15% | 258 | 54% | 152 | 32% | 482 | | 10 | 18 | 28 | 59 | 46 |
| 49 | 30 | 56 | 86 | 18% | 213 | 45% | 170 | 36% | 469 | | 14 | 26 | 40 | 80 | 57 |
| Total | 87 | 147 | 234 | 14% | 877 | 53% | 542 | 33% | 1653 | 1,060 | 10 | 17 | 27 | 62 | 49 |

# 2012 Harvest Data
for Mule Deer Herd MD207 – PAINTROCK

| Area | Type | Active Lic/Htrs | Buck | Doe | Fawn | Total | Success | Days/ Harvest | Days | Licenses Sold |
|---|---|---|---|---|---|---|---|---|---|---|
| 41 SAND CREEK | | | | | | | | | | |
| | General | 276 | 121 | 14 | 0 | 135 | 48.90% | 6.4 | 863 | |
| | Type 6 | 58 | 0 | 27 | 8 | 35 | 60.30% | 4.2 | 147 | 100 |
| Pooled Total | | 308 (334)* | 121 | 41 | 8 | 170 | 55.20% (50.9%)* | 5.9 | 1010 | |
| Pooled Resident | | 180 | 52 | 14 | 6 | 72 | 40% | 7.8 | 562 | |
| Pooled Nonresident | | 128 | 69 | 27 | 2 | 98 | 76.60% | 4.6 | 448 | |
| 44 BROKENBACK CREEK | | | | | | | | | | |
| | General | 182 | 51 | 42 | 4 | 97 | 53.30% | 7.4 | 713 | |
| Pooled Total | | 182 (182)* | 51 | 42 | 4 | 97 | 53.30% (53.3%)* | 7.4 | 713 | |
| Pooled Resident | | 78 | 13 | 14 | 4 | 31 | 39.70% | 10.3 | 318 | |
| Pooled Nonresident | | 104 | 38 | 28 | 0 | 66 | 63.50% | 6 | 395 | |
| 45 PAINTROCK CREEK | | | | | | | | | | |
| | General | 286 | 90 | 28 | 0 | 118 | 41.30% | 9.6 | 1137 | |
| | Type 6 | 25 | 0 | 12 | 0 | 12 | 48% | 4.9 | 59 | 0 |
| Pooled Total | | 295 (311)* | 90 | 40 | 0 | 130 | 44.10% (41.8%)* | 9.2 | 1196 | |
| Pooled Resident | | 161 | 38 | 18 | 0 | 56 | 34.80% | 13.4 | 750 | |
| Pooled Nonresident | | 134 | 52 | 22 | 0 | 74 | 55.20% | 6 | 446 | |
| 46 CLOUD PEAK | | | | | | | | | | |
| | General | 270 | 41 | 47 | 3 | 91 | 33.70% | 14.8 | 1349 | |
| Pooled Total | | 270 (270)* | 41 | 47 | 3 | 91 | 33.70% (33.7%)* | 14.8 | 1349 | |
| Pooled Resident | | 156 | 13 | 19 | 0 | 32 | 20.50% | 27.6 | 884 | |
| Pooled Nonresident | | 114 | 28 | 28 | 3 | 59 | 51.80% | 7.9 | 465 | |
| 47 MANDERSON | | | | | | | | | | |
| | General | 423 | 147 | 51 | 4 | 202 | 47.80% | 8.3 | 1685 | |
| | Type 6 | 65 | 0 | 20 | 0 | 20 | 30.80% | 9.8 | 195 | 98 |
| Pooled Total | | 456 (488)* | 147 | 71 | 4 | 222 | 48.70% (45.5%)* | 8.5 | 1880 | |
| Pooled Resident | | 284 | 74 | 27 | 4 | 105 | 37.00% | 10.5 | 1104 | |
| Pooled Nonresident | | 172 | 73 | 44 | 0 | 117 | 68.00% | 6.6 | 776 | |
| 49 TRAPPER CREEK | | | | | | | | | | |
| | General | 260 | 80 | 28 | 7 | 115 | 44.20% | 10.5 | 1211 | |
| | Type 6 | 15 | 0 | 8 | 0 | 8 | 53.30% | 7 | 56 | 0 |
| Pooled Total | | 269 (275)* | 80 | 36 | 7 | 123 | 45.70% (44.7%)* | 10.3 | 1267 | |
| Pooled Resident | | 166 | 28 | 21 | 0 | 49 | 29.50% | 17.6 | 863 | |
| Pooled Nonresident | | 103 | 52 | 15 | 7 | 74 | 71.80% | 5.5 | 404 | |
| 2012 Hunt Area Total | | 1780 (1860)* | 530 | 277 | 26 | 833 | 46.80% (44.8%)* | 8.9 | 7415 | 198 |
| 2012 Herd Total | | 1612 (1700)* | 530 | 277 | 26 | 833 | 51.70% (49%)* | 8.9 | 7415 | 198 |

*Active Licenses

## 2013 HUNTING SEASONS
## Paintrock Mule Deer Herd Unit (MD207)

| Hunt Area | Type | Dates of Seasons | | Quota | Limitations |
|---|---|---|---|---|---|
| | | Opens | Closes | | |
| 41 | | Oct. 15 | Oct. 24 | | General license; any deer |
| 41 | 3 | Nov. 1 | Nov. 30 | 50 | Limited quota licenses; any white-tailed deer |
| 41 | 6 | Oct. 1 | Oct. 31 | 50 | Limited quota licenses; doe or fawn valid on or within one-half (½) mile of irrigated land |
| 41, 47 | 8 | Oct. 1 | Nov. 30 | 150 | Limited quota licenses; doe or fawn white-tailed deer |
| 46 | | Oct. 15 | Oct. 24 | | General license; antlered deer |
| 47 | | Oct. 15 | Oct. 24 | | General licenses; any deer |
| | 6 | Oct. 1 | Oct. 31 | 50 | Limited quota licenses; doe or fawn valid on private land |
| 47, 51 | 3 | Oct. 15 | Nov. 30 | 75 | Limited quota licenses; any white-tailed deer |
| Archery | | | | | |
| 41, 46, 47 | | Sep. 1 | Sept. 30 | | Refer to Section 3 of this Chapter |

**Region R nonresident quota = 1000 licenses; no change**

| Hunt Area | Type | Quota change from 2012 |
|---|---|---|
| 41 | 6 | -100 |
| 41, 47 | 8 | +50 |
| 47 | 6 | -50 |
| 47, 51 | 3 | +75 |
| Total | 6 | -150 |
| | 3 | +50 |
| | 8 | +50 |

**Management Evaluation**
**Current Management Objective: 13,000**
**2012 Postseason Population Estimate: ~9,200**
**2013 Proposed Postseason Population Estimate: ~8,800**

**Herd Unit Issues.** The population objective for the Paintrock mule deer herd was set at 13,000 deer in 1995 when the herd unit was created from two pre-existing herd units (with addition of Area 41). Since the objective was only a combination of old objectives, no public input was solicited. A POP-II model estimated the herd well below the 13,000 deer level. The population objective and management goal (recreational) were unchanged following reviews in 2002 and 2007. We combined several hunt areas in 2013 that had similar seasons to help simplify our regulations for the herd unit.

Human activities are rarely severe enough in this herd unit to affect deer survival and productivity. Bentonite mining and oil/gas development occur on the west side of the herd unit where habitats are marginal. Farming has altered riparian habitats on private land and has increased available forage; however, landowner tolerance for high deer numbers is low. Antlerless deer hunting seasons are driven by landowner complaints.

**Weather.** Climatic factors affect this deer herd more than human-caused factors and drought is the most important factor influencing survival and productivity of this deer herd. Drought conditions occurred in 2000-04 and 2012. Affects of drought on upland vegetation may have resulted in a shift of deer to agricultural fields.

**Habitat.** With only two sagebrush browse transects established in this herd unit, data is insufficient to draw any inferences across the entire herd unit. These transects were established in 2004. One transect in the Brokenback drainage has been of limited utility in gauging browsing levels since production has been limited, even in non-drought years. Utilization of sagebrush along that transect has ranged from <1% to 3% (2005-2011; average=2.18). The other transect (Alkali) is in the northern portion of the herd unit. That site is only slightly more productive than Brokenback. Utilization averaged 10.9%, well below levels that should affect plant health. Weather (snow) probably determines how many deer concentrate near this site.

**Field Data.** Survival and productivity have been affected by drought, as evident in low fawn:doe ratios. During drought of 2000-04, fawn:doe ratios averaged 54:100. In years with "normal" precipitation (2005-12), 61 fawn:100 does had been observed. The 20-year average was 59:100. Unsworth et al. (1999) suggested that a winter fawn:doe ratio above 66:100 would result in an increasing population. This population is not as productive as other herds in the Basin or state, even in years with favorable weather.

The total number of deer observed during classification surveys has been declining over the past 20 years. In 1993 and 1994, 3000 and 3500 deer were surveyed, respectively. Numbers dropped to 2500 or below for the remainder of the 1990s. During drought of 2000-04, around 2000 deer were observed. Number of deer classified has rarely been over 2000 deer since then (2005-12) with the exception of 2007 (2865 deer surveyed). With low fawn:doe ratios, it was expected this population was decreasing. Farm land is surveyed from the ground and higher elevation winter ranges have been surveyed using a helicopter. Flight budgets have not kept up with cost, so less time has been allowed to locate deer; therefore, survey effort has decreased.

Maintaining buck:doe ratios between 25-29:100 has also been a goal for management of this herd unit (recreational management). During the mid to late 1980s, ratios increased from 15:100 to around 30:100 in the early 1990s. A gradual decline in buck:doe ratios occurred through the late 1990s (to 16:100 in 2000), followed by an increase to 30:100 in the mid-2000s. Between 2008-12, the buck ratio has been stable at approximately 27:100. Few large bucks (>25"antler width class) are observed in this population (Fig. 1). Changes have not been made to general license hunting seasons in response to buck:doe ratios since the 4-point or better seasons in 2002 and 2003 and a decrease in nonresident license quota in 2004 (1200 to 1000 licenses).

**Harvest Data.** Buck harvest can be dependent on hunting season regulations, number of bucks available (population), hunter numbers (especially nonresident), snow depth and weather at higher elevations (migration), and access (to private land and on public land roads [snow depth]).

Structure of the hunting seasons in this herd unit has remained fairly constant over the past 20 years. General licenses have been opened Oct. 15 to Nov. 4. In some years, some hunt areas have changed between "any deer" and "antlered deer" depending on trends in previous year's sex and age ratios. When the buck:doe ratio dropped to 16:100 in 2001, a 4-point antler restriction was enacted during the 2002 and 2003 hunting seasons. Buck harvest decreased significantly and hunter effort increased those two years. Nonresident hunters typically take 60% of all harvested bucks but only make up 40% of all hunters (Fig. 2). Many hunters (nonresidents) harvest the first buck they see, thus many small (>20" antler spread) deer are harvested (Fig. 3). When Region R was created (1996), the nonresident quota was 1500 hunters. That level was adjusted when buck ratios began to decline, and has been at 1000 since 2004.

Antlerless (doe/fawn) licenses were issued in response to landowner concerns of too many deer in crops and may reflect population level. In the 1980s through early 1990s, 600-1000 doe/fawn licenses were issued (1986-1993 average=690; Fig. 4). Between 1995-99, 0-50 doe/fawn licenses were issued. Number of doe/fawn licenses increased to between 350-500 during 1997-2011, and only 200 were issued last year. For 2013, 100 doe/fawn licenses will be offered. Does taken on general licenses may reflect the ease with which hunters can find bucks (Fig. 3).

**Population.** Spreadsheet models have replaced POP-II for estimating populations of big game species. The model selected for this herd (constant juvenile, constant adult survival [CJ,CA]) estimates this population was at objective (13,000 deer) through the late 1990s. Those estimates were higher than estimates produced by POP-II population models. Beginning with the extended drought in 2000-04, this population began decreasing. By post-season 2012, the population was estimated at approximately 9000 deer.

**Management Summary.** Several indices suggest the Paintrock mule deer population has declined since the early 1990s, in agreement with the population model. Total number of deer classified, fawn:doe ratios, buck harvest, doe harvest, and number of doe/fawn licenses needed to address crop depredation have all declined. Buck:doe ratios have recently remained stable; however, that may be more of a factor of less does in the population. Numbers of doe/fawn licenses for the 2013 season are as low as needed to address crop depredation. Hunt areas without farmland are proposed to change to "antlered deer" on general licenses. Many hunters have urged more conservative buck seasons (4-points or better) to increase buck numbers to previous levels and to increase number of trophy (>25" antler width) bucks available. Changes to the general license season and/or nonresident quota are usually only proposed if buck:doe ratios indicate drastic declines, but should be considered in the near future.

At this time, we are recommending to maintain the nonresident hunter quota for Region R at 1000 hunters. We are concerned about the high number of small bucks that are harvested each year (Fig. 3) and the low number of older age-class bucks seen during classification surveys (Fig. 1). Buck:doe ratios in the Region have been stable for the past five years. Decreasing the quota may increase buck numbers and allow some to grow older (larger), when needed.

**Literature Cited**

Unsworth, J.W., D.F. Pac, G. C. White, and R.M. Bartman. 1999. Mule deer survival in Colorado, Idaho, and Montana. Journal of Wildlife Management 36:315-326.

Figure 1. Antler width class of bucks classified in the Paintrock mule deer herd, 2007-2012.

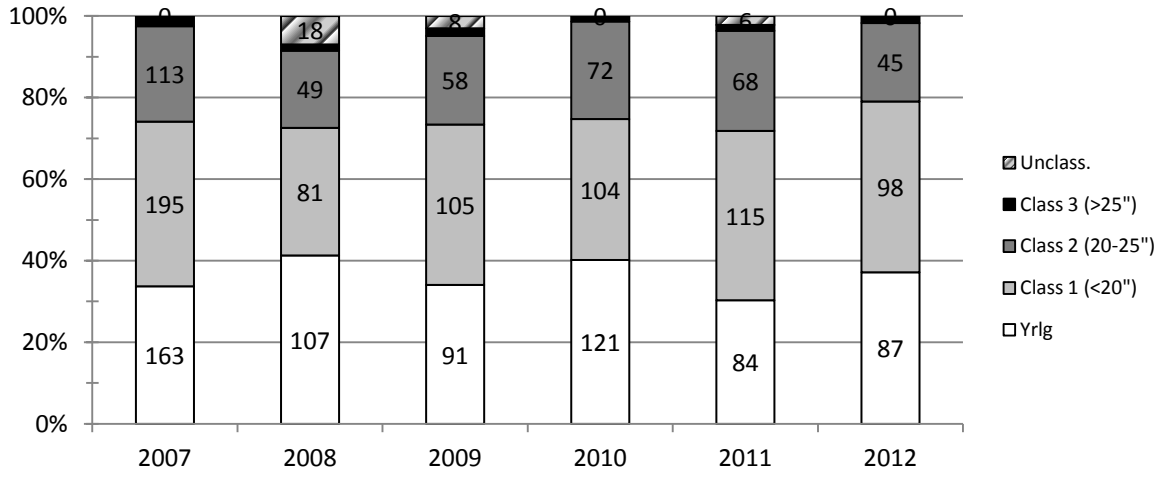



Figure 2. Buck harvest by resident and nonresident hunters in the Paintrock mule deer herd unit and the nonresident hunter quota for Region R, 1990-2012.

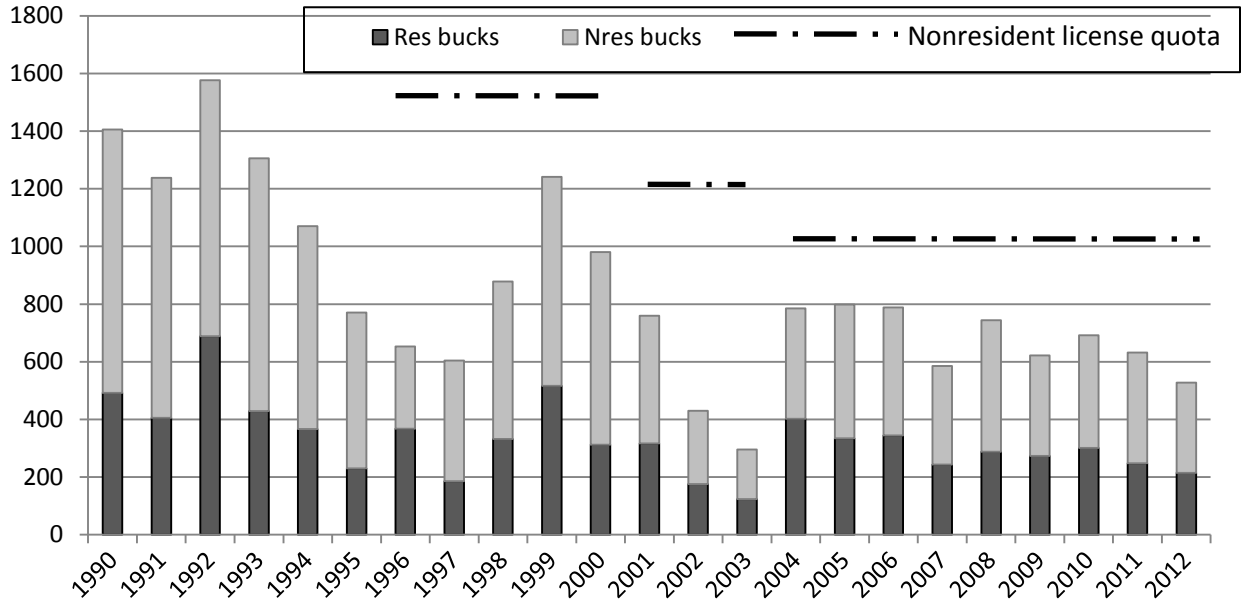



Figure 3. Antler width class of harvested bucks checked in the field in the Paintrock mule deer herd, 2006-2012.

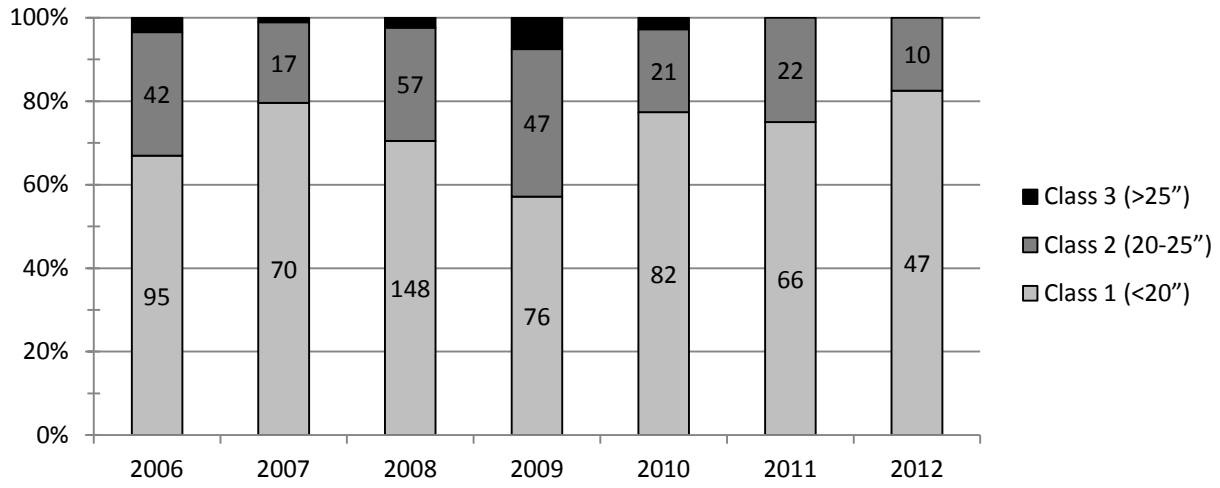
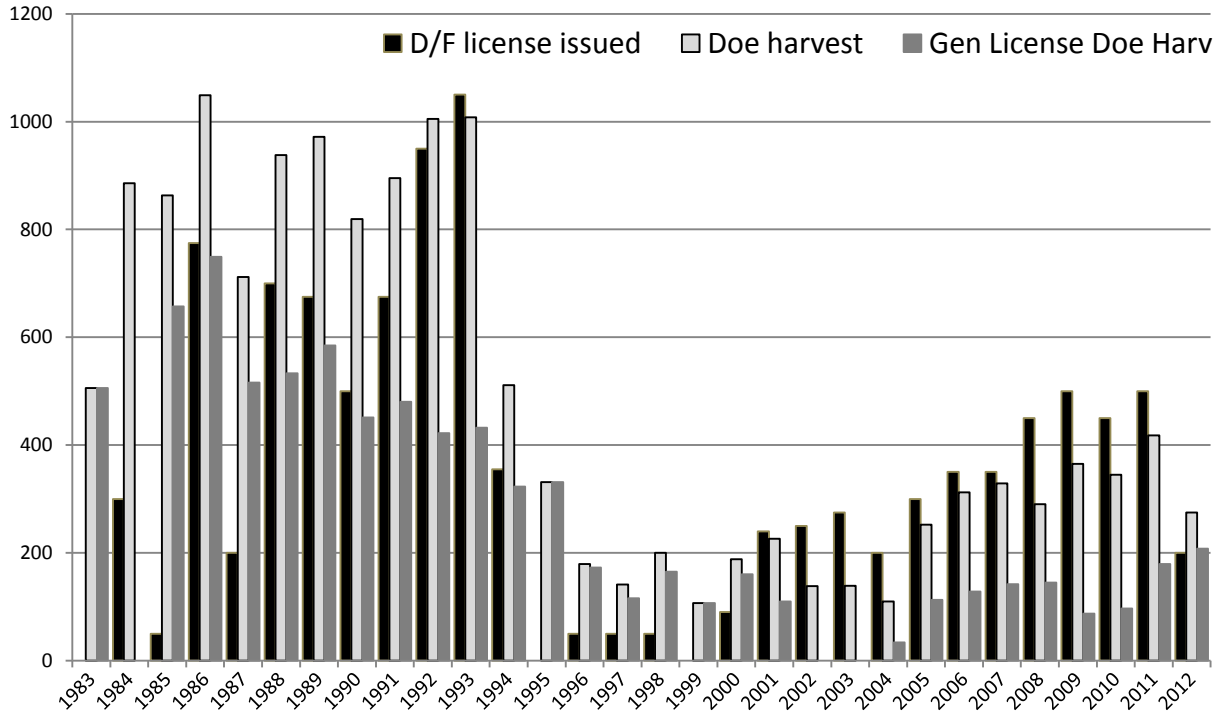
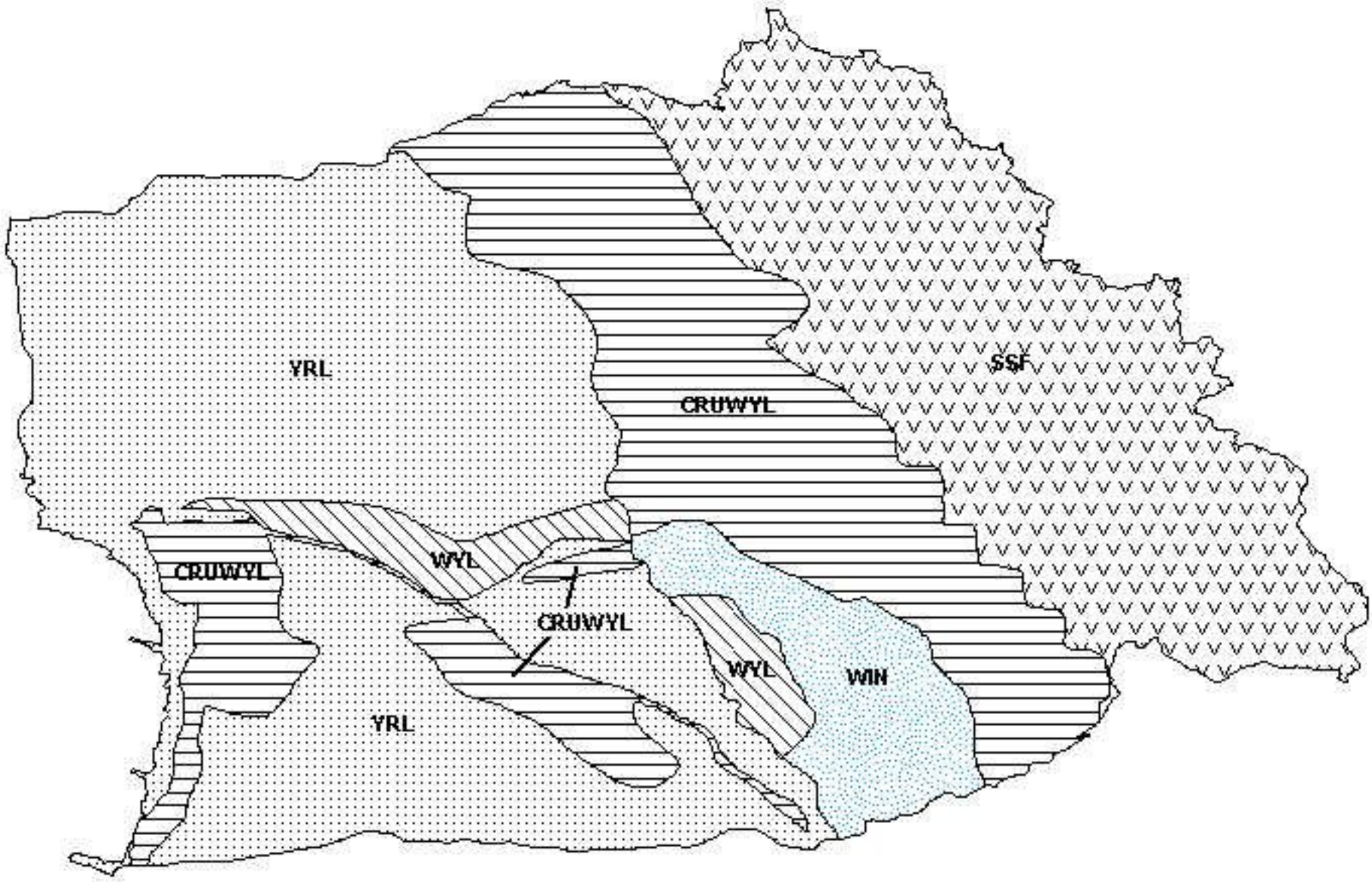



Figure 4. Number of doe/fawn licenses, total doe harvest, and doe harvest on general licenses for the Paintrock mule deer herd, 1983-2012.






Mule Deer (MD207) - Paintrock
HA 41, 44-47, 49
Revised - 3/96

N

# 2012 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2012 - 5/31/2013

HERD: MD208 - SOUTHWEST BIGHORNS

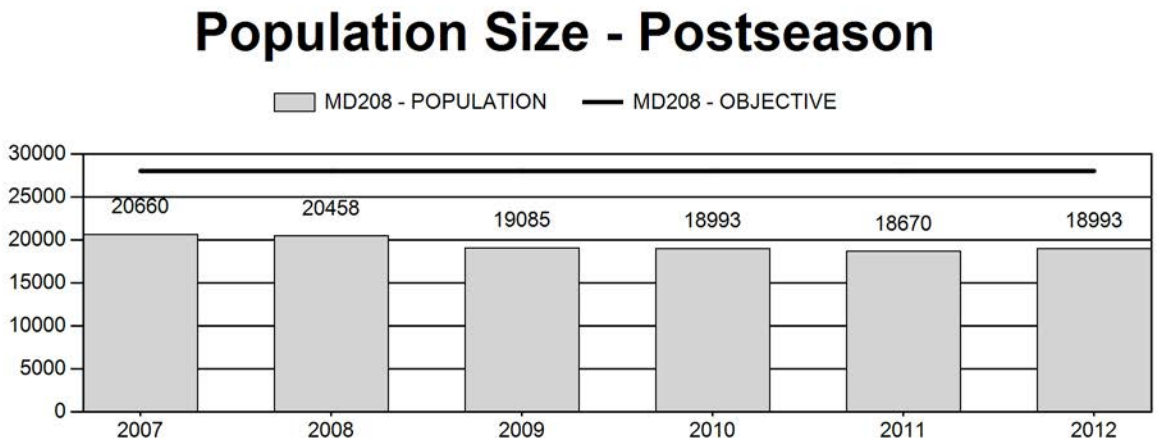
HUNT AREAS: 35-37, 39-40, 164
PREPARED BY: BART KROGER

| | 2007 - 2011 Average | 2012 | 2013 Proposed |
|---|---|---|---|
| Population: | 19,573 | 18,993 | 19,591 |
| Harvest: | 1,685 | 1,149 | 1,025 |
| Hunters: | 2,584 | 2,046 | 1,900 |
| Hunter Success: | 65% | 56% | 54% |
| Active Licenses: | 2,840 | 2,199 | 2,000 |
| Active License Percent: | 59% | 52% | 51% |
| Recreation Days: | 11,702 | 9,447 | 9,000 |
| Days Per Animal: | 6.9 | 8.2 | 8.8 |
| Males per 100 Females | 31 | 31 | |
| Juveniles per 100 Females | 59 | 61 | |

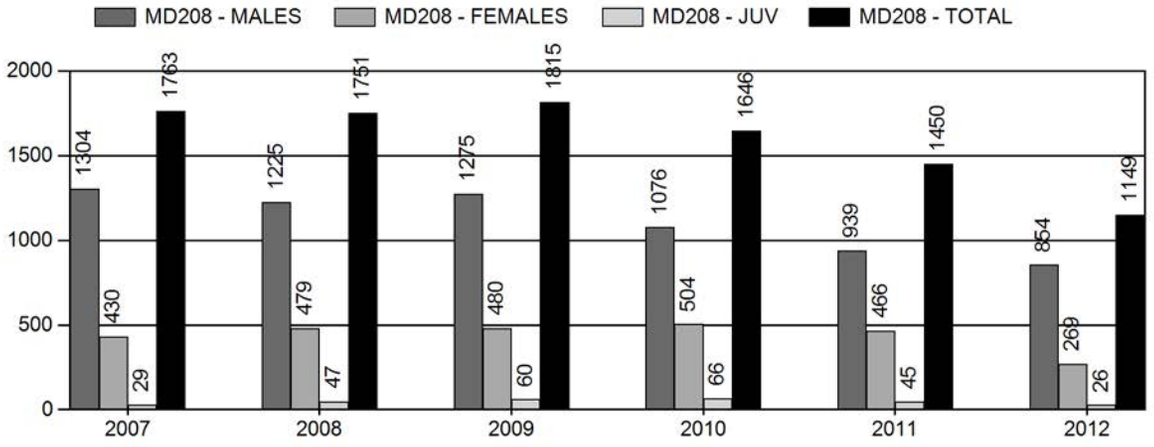
| | |
|---|---|
| Population Objective: | 28,000 |
| Management Strategy: | Recreational |
| Percent population is above (+) or below (-) objective: | -32.2% |
| Number of years population has been + or - objective in recent trend: | 20 |
| Model Date: | 4/11/2013 |

**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

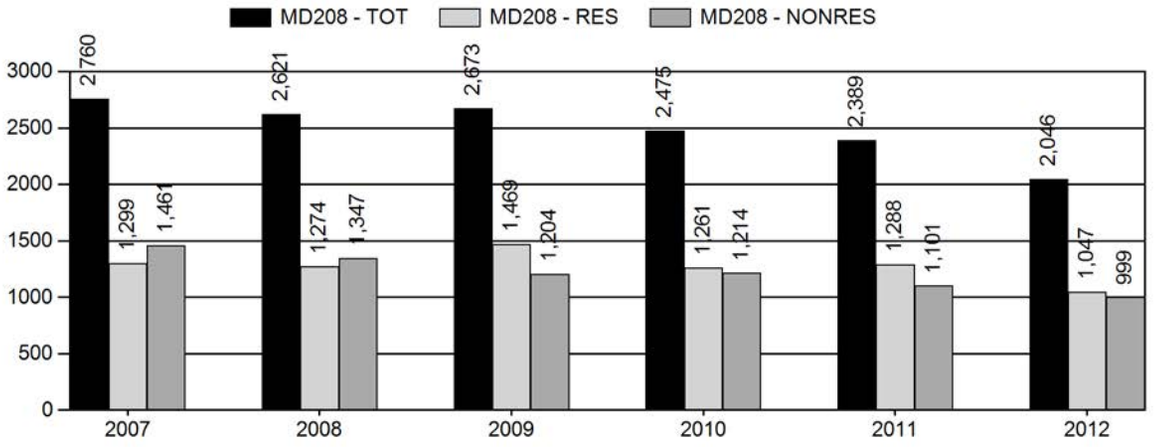
| | JCR Year | Proposed |
|---|---|---|
| Females ≥ 1 year old: | 3.0% | 2% |
| Males ≥ 1 year old: | 20% | 18% |
| Juveniles (< 1 year old): | 0.5% | 0.3% |
| Total: | 6% | 5% |
| Proposed change in post-season population: | 0% | +2% |



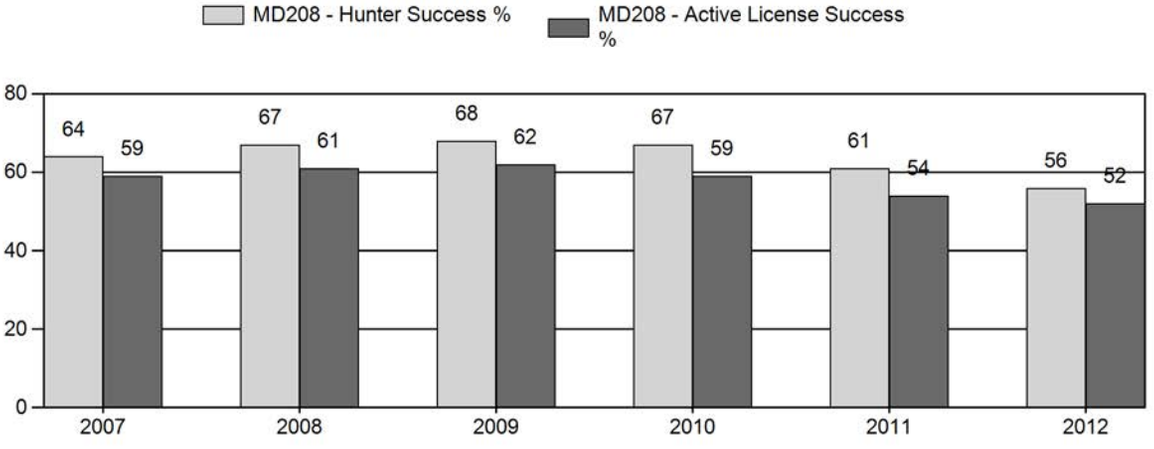
# Harvest



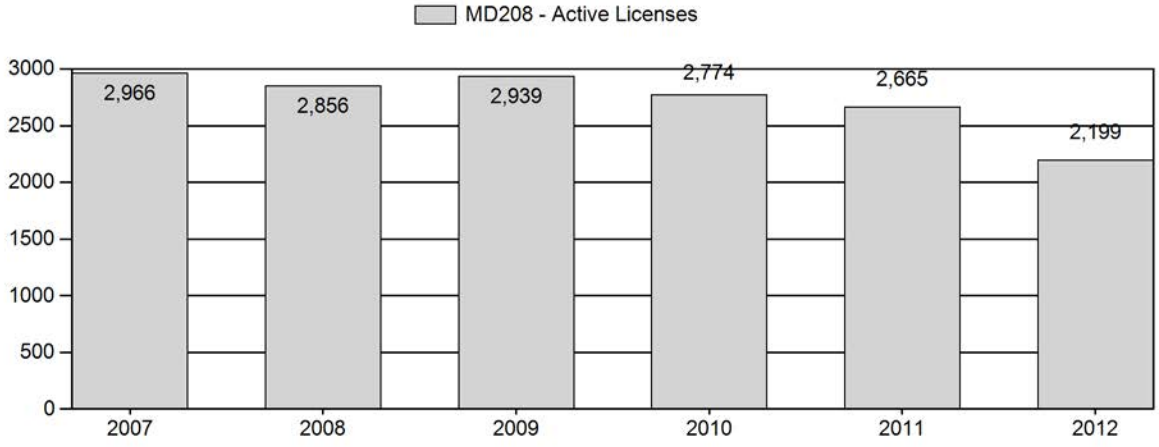

# Number of Hunters



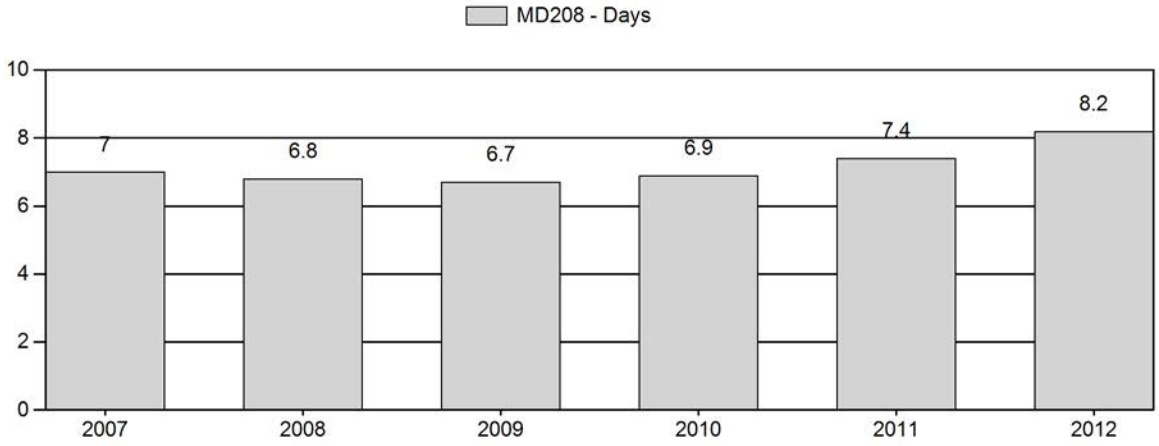

# Harvest Success



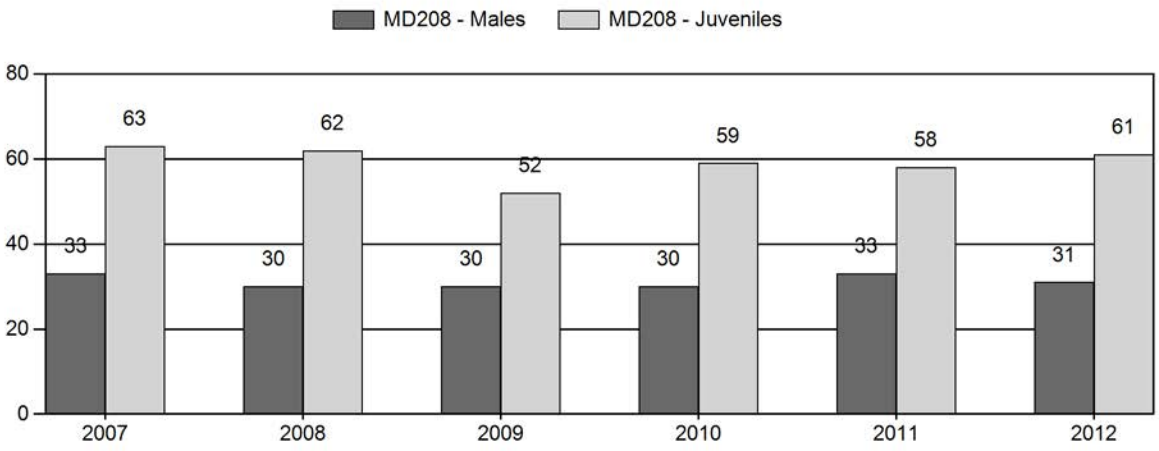
# Active Licenses




# Days per Animal Harvested




# Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD208 - SOUTHWEST BIGHORNS

| | | MALES | | | | FEMALES | | JUVENILES | | | | Males to 100 Females | | | | Young to | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Post Pop | Ylg | Adult | Total | % | Total | % | Total | % | Tot Cls | Cls Obj | Yling | Adult | Total | Conf Int | 100 Fem | Conf Int | 100 Adult |
| 2007 | 20,660 | 96 | 244 | 340 | 17% | 1,015 | 51% | 635 | 32% | 1,990 | 1,249 | 9 | 24 | 33 | ± 3 | 63 | ± 4 | 47 |
| 2008 | 20,458 | 120 | 215 | 335 | 16% | 1,101 | 52% | 686 | 32% | 2,122 | 1,210 | 11 | 20 | 30 | ± 2 | 62 | ± 4 | 48 |
| 2009 | 19,085 | 142 | 249 | 391 | 16% | 1,315 | 55% | 682 | 29% | 2,388 | 914 | 11 | 19 | 30 | ± 2 | 52 | ± 3 | 40 |
| 2010 | 18,993 | 93 | 185 | 278 | 16% | 930 | 53% | 553 | 31% | 1,761 | 1,111 | 10 | 20 | 30 | ± 2 | 59 | ± 4 | 46 |
| 2011 | 18,670 | 56 | 181 | 237 | 17% | 721 | 52% | 419 | 30% | 1,377 | 1,094 | 8 | 25 | 33 | ± 3 | 58 | ± 4 | 44 |
| 2012 | 18,993 | 56 | 141 | 197 | 16% | 633 | 52% | 383 | 32% | 1,213 | 1,152 | 9 | 22 | 31 | ± 3 | 61 | ± 5 | 46 |

## 2013 HUNTING SEASONS
## SOUTHWEST BIGHORNS MULE DEER HERD (MD208)

| Hunt Area | Type | Dates of Seasons Opens | Closes | Quota | Limitations |
|---|---|---|---|---|---|
| 35 | | Oct. 15 | Oct. 31 | | General license; any deer |
| 36 | | Oct. 15 | Oct. 22 | | General license; antlered mule deer three (3) points or more on either antler or any white-tailed deer |
| | 8 | Oct. 15 | Oct. 22 | | Limited quota; doe or fawn white-tailed deer |
| 37 | 1 | Oct. 15 | Oct. 31 | 150 | Limited quota; any deer |
| | 3 | Nov. 1 | Nov. 30 | 15 | Limited quota; any white-tailed deer |
| | 6 | Sep. 15 | Nov.15 | 75 | Limited quota; doe or fawn valid on or within one-half (1/2) mile of irrigated land |
| 37, 127 | 8 | Sep. 15 | Nov. 30 | 50 | Limited quota; doe or fawn white-tailed deer |
| 39 | | Oct. 15 | Oct. 25 | | General license; antlered deer |
| 40 | | Oct. 15 | Oct. 31 | | General license; antlered deer on national forest; any deer off national forest |
| | 6 | Oct. 15 | Oct. 31 | 100 | Limited quota; doe or fawn valid on private land |
| | 8 | Oct. 15 | Nov. 30 | 50 | Limited quota; doe or fawn white-tailed deer |
| 164 | | Oct. 1 | Oct. 10 | | General license; any deer |
| | 3 | Nov. 1 | Nov. 30 | 25 | Limited quota; any white-tailed deer |
| | 6 | Oct. 1 | Oct. 31 | 50 | Limited quota; doe or fawn valid on or within one-half (1/2) mile of irrigated land |
| Archery 35, 36, 39, 40, 164 | | Sep. 1 | Sept. 30 | | Refer to Section 3 |
| 37 | | Aug. 15 | Sep. 30 | | Refer to Section 3 |

Region M Nonresident general license quota – 1000 licenses

| Hunt Area | Type | Quota change from 2012 |
|---|---|---|
| 37 | 6 | +50 |
| | 7 | -50 |

| | | |
|---|---|---|
| 40 | 6 | -100 |
| 164 | 6 | -50 |
| **HU Total** | **6** | **-100** |
| | **7** | **-50** |

**Management Evaluation**
**Current Postseason Population Management Objective:** 28,000
**Management Strategy:** Recreational
**2012 Postseason Population Estimate:** 19,000
**2013 Proposed Postseason Population Estimate:** 19,600

**Herd Unit Issues.** Since 2007, the population model only simulates a decline of about 8% in deer numbers. Currently, perceptions of field personnel as well as most landowners and hunters feel this deer herd has declined as much as 30-50% in recent years. Because of these deer declines and poor hunting conditions, total hunter numbers have declined by as much as 24% despite unchanged season structures and nonresident Region license quotas. The herd unit is about 70% public land and 30% private land. Much of the herd unit is supported by vast areas of cheatgrass, due to large wildfires in 1996. Little to no regeneration of sagebrush and native herbaceous species has occurred since those fires. Deer densities are typically higher in the mid to upper elevations, while the lower elevation desert areas support fewer deer. Poor habitat conditions, long-term drought, and crop damage continue to be major management concerns for this herd. The herd objective and management strategy will be evaluated in 2014.

**Weather.** The winter of 2010/11 was severe enough to have caused significant mortality in this herd. After this winter event, reduced numbers of deer were apparent throughout the herd unit. Since then, winter conditions has been sporadic, with 2011/12 being mostly mild and 2012/13 being slightly severe with persistent snow cover throughout the winter. Overall, annual drought conditions continue to persist, with periodic moisture events occurring during the year. Spring and early summer moisture in 2010 and 2011 was above normal, but 2012 was way below normal. These cyclic weather events for the most part appears to be having mostly negative effects on this deer herd since overall numbers continue to decline.

**Habitat.** Overall, habitat conditions have declined in this herd unit since the onset of drought in the 1990's. With reduced moisture, spring green-up and annual plant growth has been minimal in most years. Lack of precipitation has also affected available water in many stock reservoirs and perennial streams. Two sagebrush transects were established in this herd unit in September 2004 (Appendix C). Overall, annual production (leader growth) for these transects has average around 2cm. Winter utilization remains low at about 10% for these transects. Until considerable moisture regimes return, and forage quality improves, herd growth and survival will continue to be adversely affected by reduced habitat conditions caused by these long-term drought conditions.

**Field Data.** Both aerial and ground surveys are used in obtaining post-season classification data for this deer herd. Adequate sample sizes are typically exceeded, mainly because routine classification routes for each hunt area are maintained. The number of deer classified has declined dramatically in recent years. In 2009, nearly 2,400 deer where classified, while in 2012 only 1,200 were classified; a decline of 50%. Although buck and fawn ratios have remained favorable, the declines in numbers are a significant concern. Post-season fawn and buck ratios have remained fairly consistent since 2007, with an average of 60:100 fawns and 31:100 bucks.

**Harvest Data.** Recent harvest statistics further support declining deer numbers in this herd. Since 2009, overall harvest has decreased by 38%, while hunter numbers have declined by 24%. During this same period, harvest success has dropped by 18%, while hunter effort has increased by 1.3 days. These harvest trends, along with population trends are reflective of field personnel perceptions that deer numbers have declined significantly and hunting has gotten much tougher in recent years. Nearly 80% of hunter survey comments, relative to deer numbers or hunting in this herd unit the past two years have overwhelmingly supported declining deer numbers or poor hunting. In addition, during pre-season setting meetings in Thermopolis and Worland in 2012, many sportsmen and landowners expressed concerns over significant declines of mule deer in recent years in the southern Bighorn Basin.

**Population.** For the most part, the constant juvenile & adult survival (CJ, CA) spreadsheet model best represents the long-term population trend for this herd, but seems to deviate from field personnel perceptions starting in the late 2000's. Although the model had the second lowest AIC value (n=5), field personnel, along with declines in classification sample sizes, and worsening harvest statistics indicate this population has declined more dramatically in recent years compared to model trends, therefore the model is only considered a fair representation of the herd. Because of these declining trends, and that we are below objective by 32%, we will be staying with mostly conservative seasons, except in areas where private land damage issues are still prevalent.

**Management Summary.** Hunting seasons for this herd unit mostly consist of general license hunting for about 2 weeks, with an "any" deer limitation in most areas. Hunt area 37 is the only limited quota hunt area in the herd unit. For the most part no changes to the general license seasons will be made, except for a slightly shorter season for area 164 in order to satisfy hunter concerns regarding too much hunting pressure in this area. In addition, the Region M nonresident quota will be reduced from 1200 to 1000 licenses. This reduction should not influence nonresident hunter numbers since there were still roughly 200 Region M licenses available after the hunting season in 2012. Some slight reductions in Type 6 licenses in areas 40 and 164 will occur. Damage issues in these areas have mostly subsided; therefore some reduction in harvest is warranted. The projected 2013 harvest is about 1000 deer. This deer herd will continue to struggle in growth because of poor habitat conditions and prolonged drought, despite these conservative hunting seasons.

| INPUT | |
|---|---|
| **Species:** | Mule Deer |
| **Biologist:** | Bart Kroger |
| **Herd Unit & No.:** | SW Bighorn, MD208 |
| **Model date:** | 04/11/13 |

☐ Clear form

| MODELS SUMMARY | | Fit | Relative AICc | Check best model to create report | Notes |
|---|---|---|---|---|---|
| **CJ,CA** | **Constant Juvenile & Adult Survival** | 43 | 52 | ☑ CJ,CA Model | |
| **SCJ,SCA** | **Semi-Constant Juvenile & Semi-Constant Adult Survival** | 40 | 49 | ☐ SCJ,SCA M | |
| **TSJ,CA** | **Time-Specific Juvenile & Constant Adult Survival** | 2 | 117 | ☐ TSJ,CA Model | |

**Population Estimates from Top Model**

| Year | Posthunt Population Est. | | Trend Count | Predicted Prehunt Population | | | | Predicted Posthunt Population | | | | Objective |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Field Est | Field SE | | Juveniles | Total Males | Females | Total | Juveniles | Total Males | Females | Total | |
| **1993** | | | | 6400 | 6990 | 16906 | 30297 | 6253 | 4689 | 14840 | 25781 | 28000 |
| **1994** | | | | 5417 | 5757 | 14583 | 25757 | 5371 | 3989 | 13368 | 22728 | 28000 |
| **1995** | | | | 6389 | 4912 | 13066 | 24368 | 6322 | 3545 | 12455 | 22322 | 28000 |
| **1996** | | | | 7011 | 4781 | 12528 | 24320 | 6915 | 3687 | 12006 | 22608 | 28000 |
| **1997** | | | | 6485 | 5064 | 12297 | 23847 | 6437 | 3722 | 11988 | 22147 | 28000 |
| **1998** | | | | 7911 | 4966 | 12153 | 25030 | 7892 | 3337 | 11897 | 23126 | 28000 |
| **1999** | | | | 6896 | 5023 | 12465 | 24383 | 6852 | 3333 | 12044 | 22230 | 28000 |
| **2000** | | | | 5198 | 4740 | 12313 | 22251 | 5153 | 3174 | 11897 | 20224 | 28000 |
| **2001** | | | | 4640 | 4145 | 11728 | 20513 | 4624 | 2847 | 11284 | 18754 | 28000 |
| **2002** | | | | 5482 | 3718 | 11053 | 20253 | 5454 | 2521 | 10732 | 18708 | 28000 |
| **2003** | | | | 5863 | 3658 | 10797 | 20317 | 5837 | 2569 | 10488 | 18894 | 28000 |
| **2004** | | | | 7238 | 3803 | 10687 | 21728 | 7205 | 2627 | 10401 | 20233 | 28000 |
| **2005** | | | | 7016 | 4220 | 10980 | 22216 | 6989 | 3108 | 10602 | 20699 | 28000 |
| **2006** | | | | 6680 | 4581 | 11096 | 22357 | 6623 | 3348 | 10810 | 20781 | 28000 |
| **2007** | | | | 6730 | 4691 | 11179 | 22599 | 6698 | 3256 | 10706 | 20660 | 28000 |
| **2008** | | | | 6645 | 4631 | 11108 | 22384 | 6593 | 3284 | 10581 | 20458 | 28000 |
| **2009** | | | | 5482 | 4627 | 10972 | 21081 | 5416 | 3225 | 10444 | 19085 | 28000 |
| **2010** | | | | 6008 | 4259 | 10536 | 20803 | 5935 | 3076 | 9982 | 18993 | 28000 |
| **2011** | | | | 5722 | 4270 | 10274 | 20265 | 5672 | 3237 | 9761 | 18670 | 28000 |
| **2012** | | | | 5907 | 4339 | 10011 | 20257 | 5878 | 3399 | 9715 | 18993 | 28000 |
| **2013** | | | | 6157 | 4535 | 10027 | 20719 | 6129 | 3655 | 9807 | 19591 | 28000 |
| **2014** | | | | | | | | | | | | 28000 |
| **2015** | | | | | | | | | | | | 28000 |
| **2016** | | | | | | | | | | | | 28000 |
| **2017** | | | | | | | | | | | | 28000 |
| **2018** | | | | | | | | | | | | 28000 |
| **2019** | | | | | | | | | | | | 28000 |
| **2020** | | | | | | | | | | | | 28000 |
| **2021** | | | | | | | | | | | | 28000 |
| **2022** | | | | | | | | | | | | 28000 |
| **2023** | | | | | | | | | | | | 28000 |
| **2024** | | | | | | | | | | | | 28000 |
| **2025** | | | | | | | | | | | | 28000 |

## Survival and Initial Population Estimates

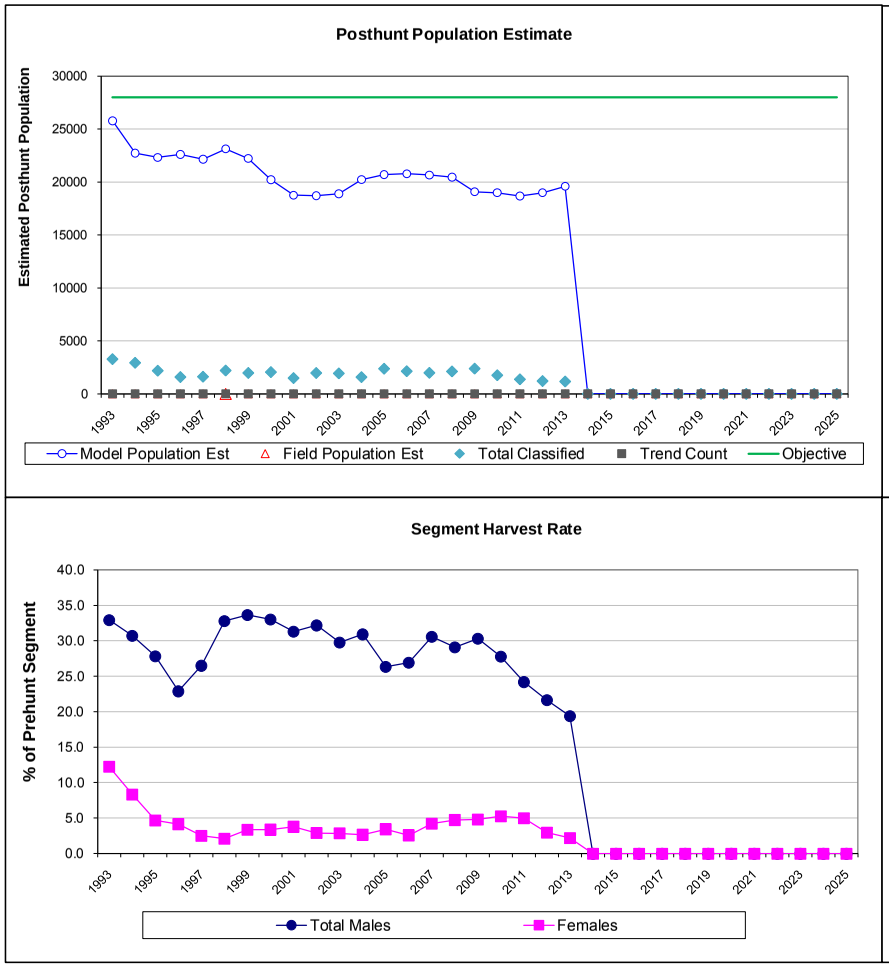
| Year | Annual Juvenile Survival Rates | | | Annual Adult Survival Rates | | |
|---|---|---|---|---|---|---|
| | Model Est | Field Est | SE | Model Est | Field Est | SE |
| 1993 | 0.54 | | | 0.87 | | |
| 1994 | 0.54 | | | 0.87 | | |
| 1995 | 0.54 | | | 0.87 | | |
| 1996 | 0.54 | | | 0.87 | | |
| 1997 | 0.54 | | | 0.87 | | |
| 1998 | 0.54 | | | 0.87 | | |
| 1999 | 0.54 | | | 0.87 | | |
| 2000 | 0.54 | | | 0.87 | | |
| 2001 | 0.54 | | | 0.87 | | |
| 2002 | 0.54 | | | 0.87 | | |
| 2003 | 0.54 | | | 0.87 | | |
| 2004 | 0.54 | | | 0.87 | | |
| 2005 | 0.54 | | | 0.87 | | |
| 2006 | 0.54 | | | 0.87 | | |
| 2007 | 0.54 | | | 0.87 | | |
| 2008 | 0.54 | | | 0.87 | | |
| 2009 | 0.54 | | | 0.87 | | |
| 2010 | 0.54 | | | 0.87 | | |
| 2011 | 0.54 | | | 0.87 | | |
| 2012 | 0.54 | | | 0.87 | | |
| 2013 | 0.54 | | | 0.87 | | |
| 2014 | | | | | | |
| 2015 | | | | | | |
| 2016 | | | | | | |
| 2017 | | | | | | |
| 2018 | | | | | | |
| 2019 | | | | | | |
| 2020 | | | | | | |
| 2021 | | | | | | |
| 2022 | | | | | | |
| 2023 | | | | | | |
| 2024 | | | | | | |
| 2025 | | | | | | |

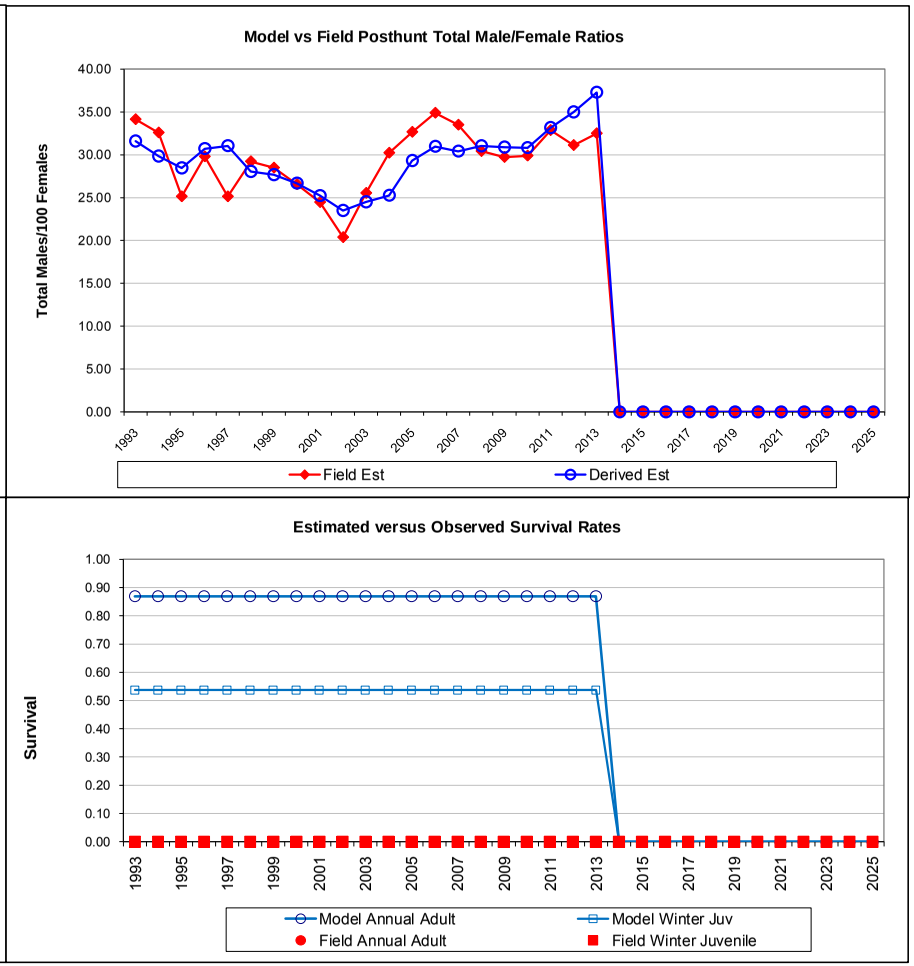
| Parameters: | Optim cells |
|---|---|
| Juvenile Survival = | 0.538 |
| Adult Survival = | 0.869 |
| Initial Total Male Pop/10,000 = | 0.469 |
| Initial Female Pop/10,000 = | 1.484 |

| MODEL ASSUMPTIONS | |
|---|---|
| Sex Ratio (% Males) = | 50% |
| Wounding Loss (total males) = | 10% |
| Wounding Loss (females) = | 10% |
| Wounding Loss (juveniles) = | 10% |

| Year | Classification Counts: Juvenile/Female Ratio | | | Classification Counts: Total Male/Female Ratio | | | Classification Counts | | | | Harvest: Segment Harvest Rate (% of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Derived Est | Field Est | Field SE | Derived Est | Field Est w/o bull adj | Field SE | Juv | Males | Females | Total Harvest | Total Males | Females |
| 1993 | | 42.14 | 1.79 | 31.60 | 34.14 | 1.57 | 134 | 2092 | 1879 | 4105 | 32.9 | 12.2 |
| 1994 | | 40.18 | 1.82 | 29.84 | 32.59 | 1.59 | 42 | 1607 | 1104 | 2753 | 30.7 | 8.3 |
| 1995 | | 50.76 | 2.48 | 28.46 | 25.14 | 1.59 | 61 | 1243 | 556 | 1860 | 27.8 | 4.7 |
| 1996 | | 57.60 | 3.27 | 30.71 | 29.80 | 2.13 | 87 | 995 | 474 | 1556 | 22.9 | 4.2 |
| 1997 | | 53.69 | 3.02 | 31.05 | 25.14 | 1.86 | 44 | 1220 | 281 | 1545 | 26.5 | 2.5 |
| 1998 | | 66.34 | 3.13 | 28.05 | 29.23 | 1.83 | 17 | 1481 | 233 | 1731 | 32.8 | 2.1 |
| 1999 | | 56.89 | 2.89 | 27.67 | 28.49 | 1.85 | 40 | 1536 | 382 | 1958 | 33.6 | 3.4 |
| 2000 | | 43.32 | 2.26 | 26.68 | 26.57 | 1.67 | 41 | 1423 | 379 | 1843 | 33.0 | 3.4 |
| 2001 | | 40.97 | 2.53 | 25.23 | 24.47 | 1.84 | 15 | 1180 | 404 | 1599 | 31.3 | 3.8 |
| 2002 | | 50.82 | 2.58 | 23.49 | 20.38 | 1.46 | 25 | 1088 | 292 | 1405 | 32.2 | 2.9 |
| 2003 | | 55.66 | 2.85 | 24.50 | 25.54 | 1.73 | 23 | 990 | 281 | 1294 | 29.8 | 2.9 |
| 2004 | | 69.27 | 3.84 | 25.25 | 30.23 | 2.23 | 30 | 1069 | 260 | 1359 | 30.9 | 2.7 |
| 2005 | | 65.91 | 3.02 | 29.32 | 32.66 | 1.90 | 25 | 1011 | 343 | 1379 | 26.4 | 3.4 |
| 2006 | | 61.26 | 3.01 | 30.97 | 34.89 | 2.08 | 52 | 1121 | 260 | 1433 | 26.9 | 2.6 |
| 2007 | | 62.56 | 3.17 | 30.42 | 33.50 | 2.10 | 29 | 1304 | 430 | 1763 | 30.6 | 4.2 |
| 2008 | | 62.31 | 3.03 | 31.03 | 30.43 | 1.90 | 47 | 1225 | 479 | 1751 | 29.1 | 4.7 |
| 2009 | | 51.86 | 2.45 | 30.88 | 29.73 | 1.71 | 60 | 1275 | 480 | 1815 | 30.3 | 4.8 |
| 2010 | | 59.46 | 3.19 | 30.82 | 29.89 | 2.04 | 66 | 1076 | 504 | 1646 | 27.8 | 5.3 |
| 2011 | | 58.11 | 3.57 | 33.16 | 32.87 | 2.46 | 45 | 939 | 466 | 1450 | 24.2 | 5.0 |
| 2012 | | 60.51 | 3.92 | 34.99 | 31.12 | 2.54 | 26 | 854 | 269 | 1149 | 21.7 | 3.0 |
| 2013 | | 62.50 | 4.11 | 37.28 | 32.50 | 2.68 | 25 | 800 | 200 | 1025 | 19.4 | 2.2 |
| 2014 | | | | | | | | | | | | |
| 2015 | | | | | | | | | | | | |
| 2016 | | | | | | | | | | | | |
| 2017 | | | | | | | | | | | | |
| 2018 | | | | | | | | | | | | |
| 2019 | | | | | | | | | | | | |
| 2020 | | | | | | | | | | | | |
| 2021 | | | | | | | | | | | | |
| 2022 | | | | | | | | | | | | |
| 2023 | | | | | | | | | | | | |
| 2024 | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | |

## FIGURES



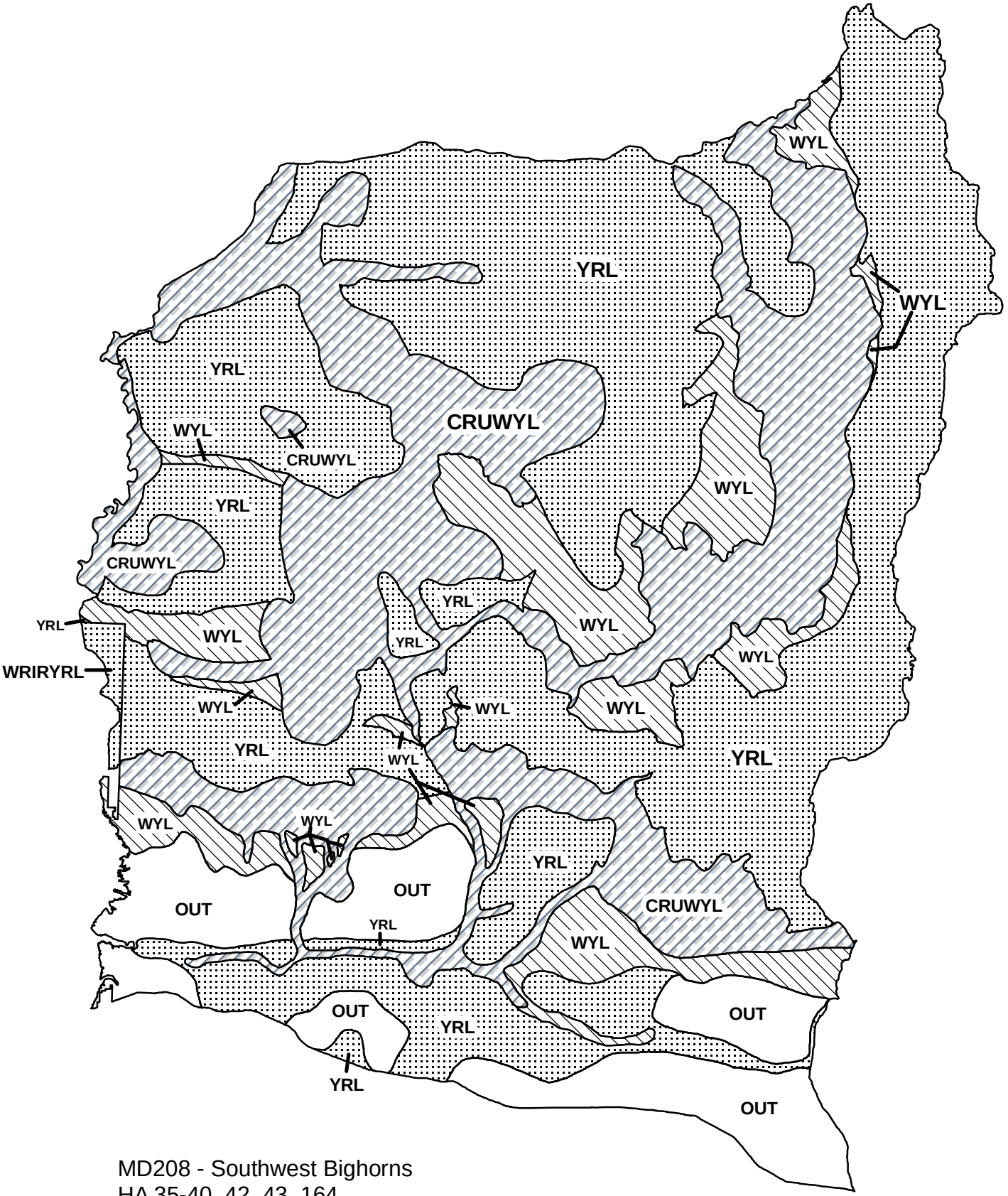







**Comments:**

## END




MD208 - Southwest Bighorns
HA 35-40, 42, 43, 164
Revised 4/2006

# 2012 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2012 - 5/31/2013

HERD: MD209 - BASIN

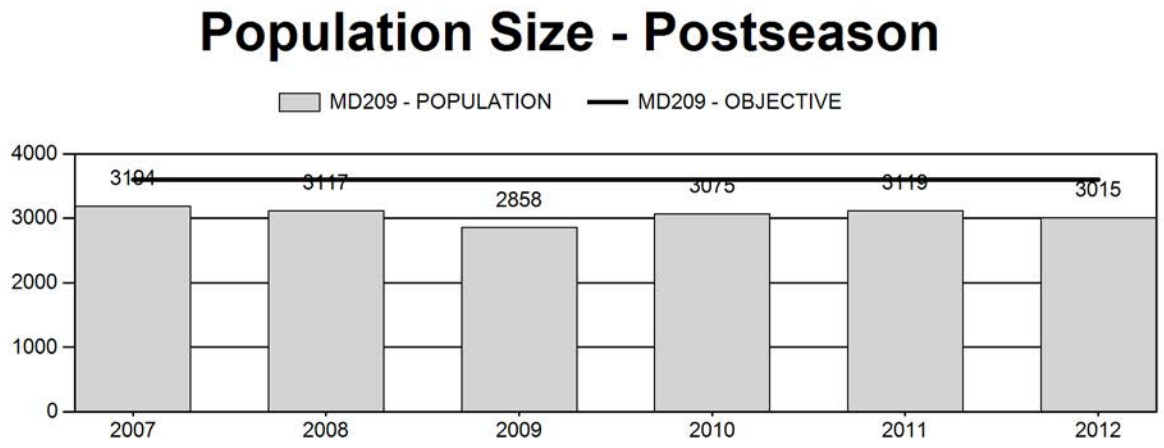
HUNT AREAS: 125, 127
PREPARED BY: BART KROGER

| | 2007 - 2011 Average | 2012 | 2013 Proposed |
|---|---|---|---|
| Population: | 3,073 | 3,015 | 2,832 |
| Harvest: | 232 | 203 | 186 |
| Hunters: | 400 | 303 | 275 |
| Hunter Success: | 58% | 67% | 68% |
| Active Licenses: | 424 | 342 | 320 |
| Active License Percent: | 55% | 59% | 58% |
| Recreation Days: | 1,948 | 1,338 | 1,400 |
| Days Per Animal: | 8.4 | 6.6 | 7.5 |
| Males per 100 Females | 30 | 32 | |
| Juveniles per 100 Females | 51 | 64 | |

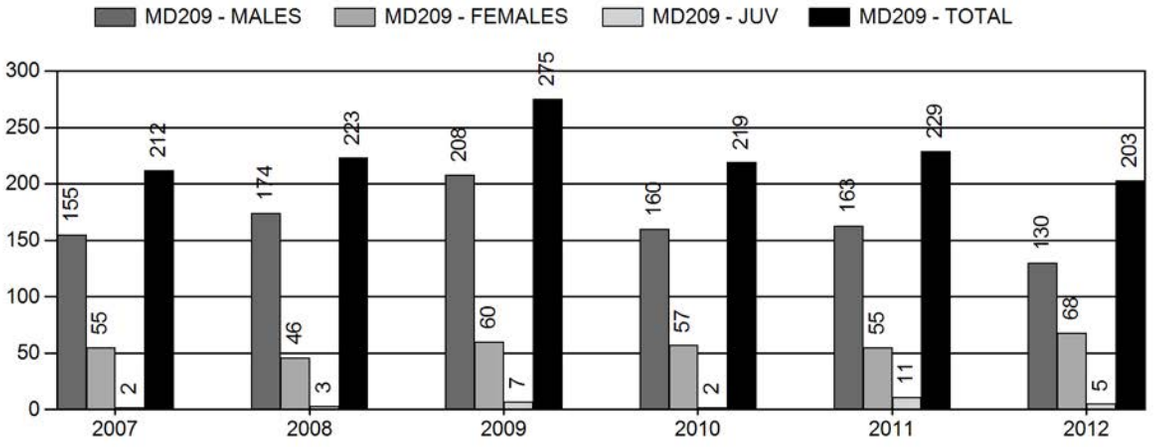
| | |
|---|---|
| Population Objective: | 3,600 |
| Management Strategy: | Recreational |
| Percent population is above (+) or below (-) objective: | -16.2% |
| Number of years population has been + or - objective in recent trend: | 6 |
| Model Date: | 4/11/2013 |

**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

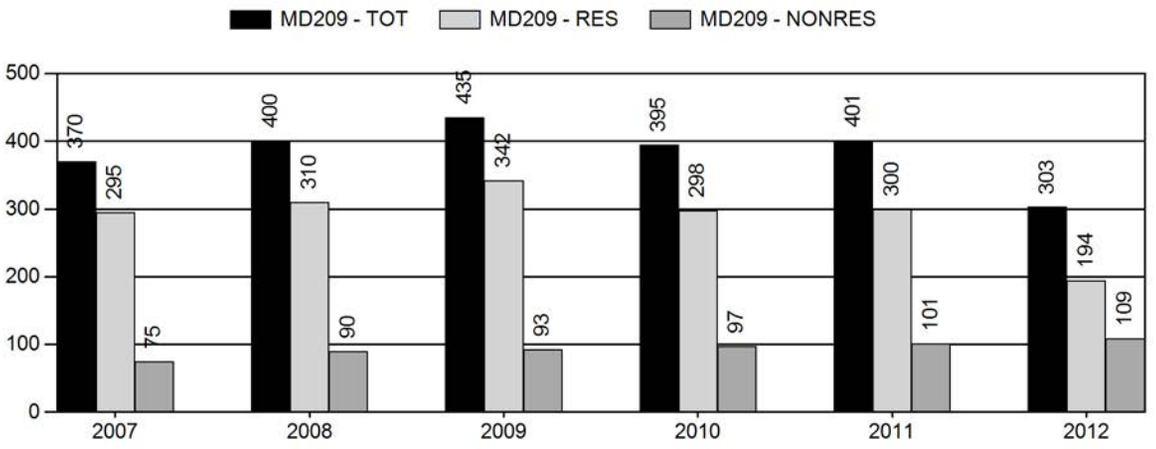
| | JCR Year | Proposed |
|---|---|---|
| Females ≥ 1 year old: | 4% | 4% |
| Males ≥ 1 year old: | 20% | 20% |
| Juveniles (< 1 year old): | 0.6% | 0.4% |
| Total: | 6% | 7% |
| Proposed change in post-season population: | 0% | -6% |



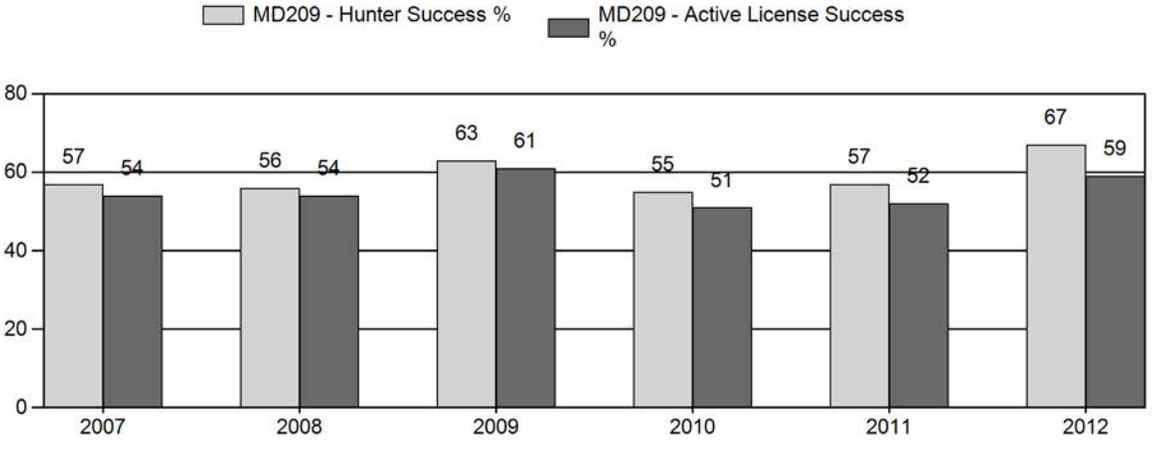
# Harvest



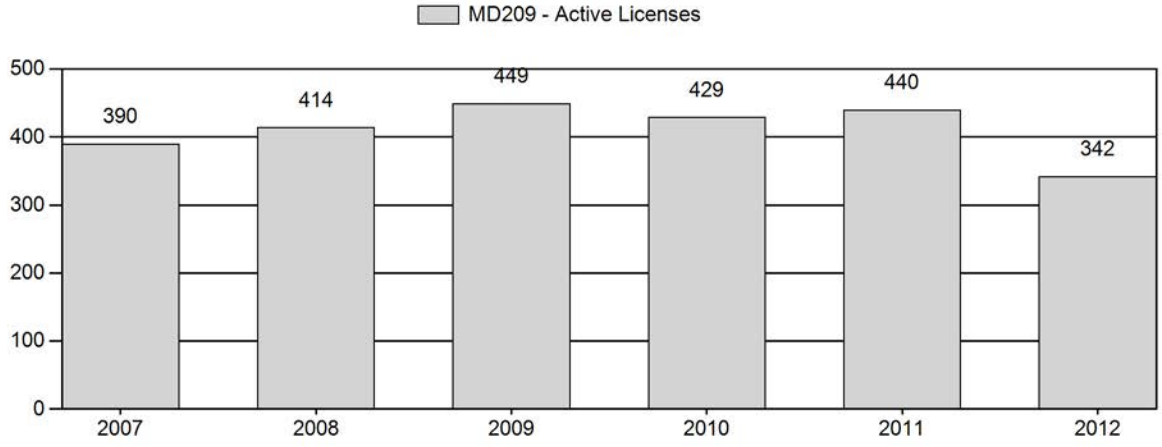

# Number of Hunters



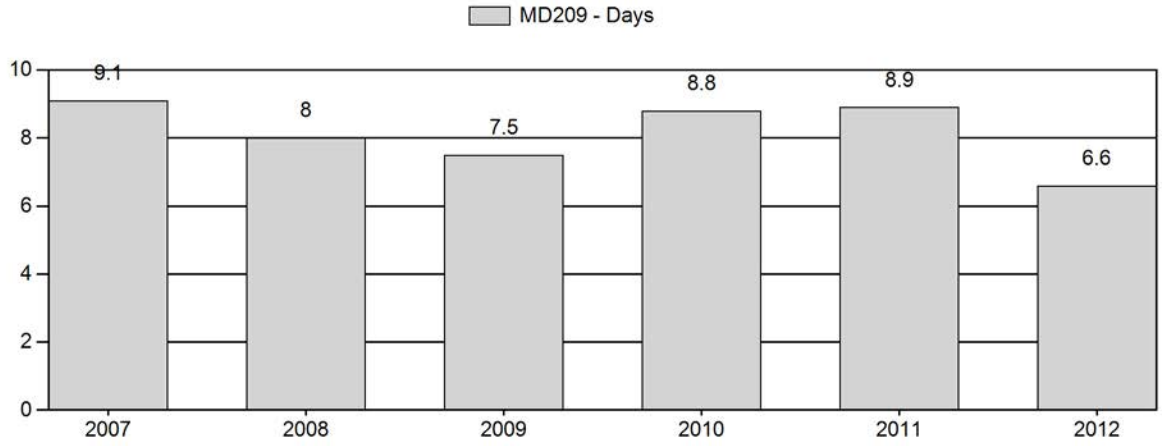

# Harvest Success



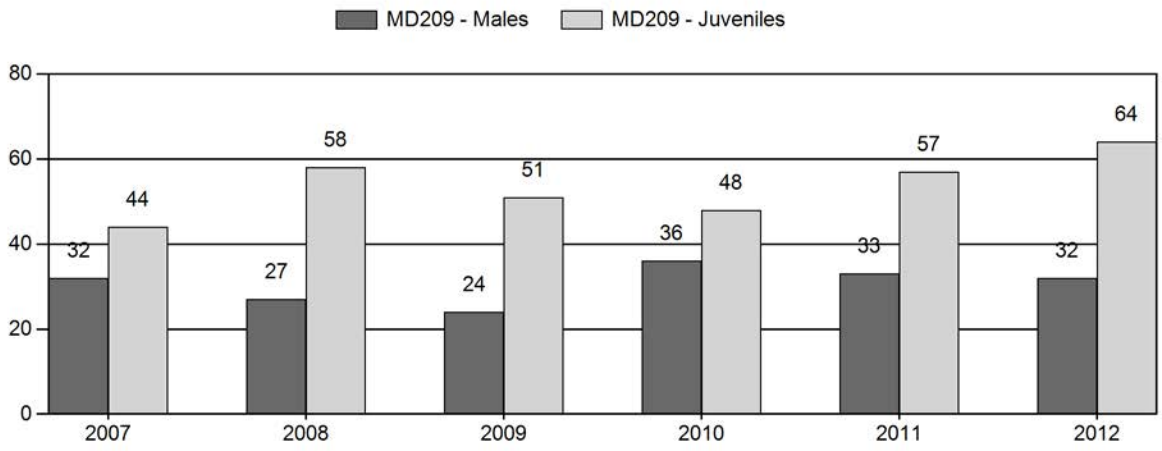
# Active Licenses




# Days per Animal Harvested




# Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD209 - BASIN

| | | MALES | | | | FEMALES | | JUVENILES | | | | Males to 100 Females | | | | Young to | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Post Pop | Ylg | Adult | Total | % | Total | % | Total | % | Tot Cls | Cls Obj | Yling | Adult | Total | Conf Int | 100 Fem | Conf Int | 100 Adult |
| 2007 | 3,194 | 48 | 110 | 158 | 18% | 496 | 57% | 216 | 25% | 870 | 570 | 10 | 22 | 32 | ± 3 | 44 | ± 4 | 33 |
| 2008 | 3,117 | 36 | 67 | 103 | 14% | 388 | 54% | 224 | 31% | 715 | 808 | 9 | 17 | 27 | ± 3 | 58 | ± 5 | 46 |
| 2009 | 2,858 | 27 | 84 | 111 | 14% | 470 | 57% | 239 | 29% | 820 | 679 | 6 | 18 | 24 | ± 3 | 51 | ± 4 | 41 |
| 2010 | 3,075 | 60 | 96 | 156 | 20% | 435 | 54% | 208 | 26% | 799 | 635 | 14 | 22 | 36 | ± 4 | 48 | ± 4 | 35 |
| 2011 | 3,119 | 25 | 65 | 90 | 17% | 274 | 53% | 156 | 30% | 520 | 811 | 9 | 24 | 33 | ± 5 | 57 | ± 7 | 43 |
| 2012 | 3,015 | 27 | 49 | 76 | 16% | 236 | 51% | 150 | 32% | 462 | 878 | 11 | 21 | 32 | ± 5 | 64 | ± 8 | 48 |

## 2013 HUNTING SEASONS
## BASIN MULE DEER HERD (MD209)

| Hunt Area | Type | Dates of Seasons Opens | Closes | Quota | Limitations |
|---|---|---|---|---|---|
| 125 | 1 | Nov. 1 | Nov. 15 | 100 | Limited quota; any deer |
| | 6 | Sep. 1 | Sep. 30 | 25 | Limited quota; doe or fawn valid on or within one-half (1/2) mile of irrigated land |
| 127 | | Oct. 15 | Oct. 24 | | General license; antlered deer off private land, any deer on private land |
| | | Oct. 25 | Oct. 31 | | General license; any white-tailed deer |
| | 3 | Nov. 1 | Nov. 30 | 15 | Limited quota; any white-tailed deer |
| | 6 | Sep. 15 | Nov.15 | 75 | Limited quota; doe or fawn valid on or within one-half (½) mile of irrigated land |
| Archery | | | | | |
| 125 | | Sep. 1 | Sep.30 | | Refer to Section 3 |
| 127 | | Aug. 15 | Sep. 30 | | Refer to Section 3 |

| Hunt Area | Type | Quota change from 2012 |
|---|---|---|
| 125 | 1 | -25 |
| 127 | 6 | -50 |
| **HU Total** | **1** | **-25** |
| | **6** | **-50** |

**Management Evaluation**

**Current Postseason Population Management Objective:** 3,600
**Management Strategy:** Recreational
**2012 Postseason Population Estimate:** 3,000
**2013 Proposed Postseason Population Estimate:** 2,800

**Herd Unit Issues.** The 2012 post-season population estimate is 17% below objective. Long-term model trends are somewhat questionable, but since the late 2000's, the model trend reflects a declining population, which mirrors that of field personnel perceptions as well as classification sample size for this herd. Deer densities in this herd unit are higher on and around private irrigated lands, whereas the dry desert areas support much fewer deer. Poor habitat conditions, long-term drought, and crop damage continue to be major management concerns for this herd. Much of the herd unit is arid desert shrubland, thus the potential for cheatgrass invasion limits vegetation treatment options. Since 2006, five guzzlers have been installed to provide additional water sources for deer.

**Weather.** The winters of 2011-12 and 2012-13 were mild with low snowpack resulting in mostly good over winter survival. However, the winter of 2010-11 along with the dry spring and summer of 2012 appeared to have been severe enough to cause some die-off and reduced survival. Overall, annual drought conditions continue to persist, with periodic moisture events occurring during the year. Spring and early summer moisture in 2010 and 2011 were above normal, but 2012 was way below normal. These cyclic weather events for the most part appear to be having mostly negative effects on this deer herd, since overall populations numbers continue to decline.

**Habitat.** Most of this herd unit lies within a 5-9" precipitation zone with limited opportunity to increase forage quality and abundance of native plant communities. Both herbaceous and shrub growth has been minimal the past three years, except in 2011, when spring precipitation was well above normal. Drought conditions have also affected available water in many stock reservoirs and perennial streams. One sagebrush transect (5-Mile Creek) was established in this herd unit in 2004 (Appendix C). Average sagebrush leader growth since 2010 has average 3-4cm, with utilization levels at about 15%. Overall, habitat conditions in this herd unit are considered poor to fair at best because of past long-term drought. Until normal moisture regimes return, herd growth and survival will be limited by current habitat conditions.

**Field Data.** Both aerial and ground classifications surveys are used in obtaining post-season buck and fawn ratios for this deer herd. Adequate sample sizes are typically achieved in most years. Routine classification routes for each hunt area have been maintained in order to reflect general trends in deer numbers over time. The number of deer classified has declined dramatically in recent years. In 2009, nearly 820 deer where classified, while in 2012 only 462 were classified; a decline of 44%. For the most part, buck and fawn ratios have remained favorable in recent years, with a 3-year average of 34 bucks and 56 fawns per 100 does.

Spotlight surveys along Gooseberry Creek in area 125 have also been used to monitor relative trends in deer densities along Gooseberry Creek. Based on these surveys, the number of deer counted has declined by about 75% since the early 1990's, 50% since the late 1990's, and has stayed fairly stable through the 2000's, with roughly about 100 deer being observed annually in recent years. These declining trends are also reflective of field personnel perceptions. In addition, during pre-season setting meetings in Thermopolis and Worland in 2012, many sportsmen and landowners expressed concerns over significant declines of mule deer in recent years in the southern Bighorn Basin.

**Harvest Data.** Recent harvest statistics do not support a declining deer population. Since 2009, overall deer harvest has decreased by 26%, hunter numbers have declined by 30%, yet hunter success has increased by about 15% and hunter effort in 2012 was the lowest (6.6 days/harvest) in the past 6 years. Of the 2012 hunter survey comments from this herd unit (n=3) relative to deer numbers and hunting, all indicated deer numbers were poor and hunting was tough. However, based on the 2012 hunter satisfaction survey, over 75% of the hunters surveyed in this herd unit indicted they were either satisfied or very satisfied with their overall hunting experience.

**Population.** The time-specific juvenile & constant adult survival (TSJ, CA) spreadsheet model was chosen to represent this herd based on its population trend. This model had the highest AIC value (n=121) of all the models, yet its trends reflect that of field personnel perceptions, along with most hunters and landowners, as well as declining classification sample sizes. The model is considered to be a fair representative of herd trend and population estimate. Because of these declining trends, and that we are below objective by 17%, we will be staying with mostly conservative seasons, except in areas where private land damage issues are still prevalent.

**Management Summary.** The only change in area 127 will be to reduce the Type 6 quota by 50 licenses. Damage issues have subsided in this area in recent years, and hunter complaints are heard annually regarding the over-harvest of mule deer in this area. The potential still exists for damage to occur in area 127, therefore some doe/fawn harvest is still warranted. For area 125, a reduction of 25 Type 1 licenses will occur due to harvest, hunter success, and hunter effort being the worst in the past 10 years. The projected 2013 harvest is roughly 186 deer. Despite

conservative hunting seasons, it's predicted this deer herd will continue to decline because of poor habitat and prolonged drought conditions.

| INPUT | |
|---|---|
| Species: | Mule Deer |
| Biologist: | Bart Kroger |
| Herd Unit & No.: | Basin, MD209 |
| Model date: | 04/11/13 |

☐ Clear form

| MODELS SUMMARY | | Fit | Relative AICc | Check best model to create report | Notes |
|---|---|---|---|---|---|
| CJ,CA | Constant Juvenile & Adult Survival | 54 | 63 | ☐ CJ,CA Model | |
| SCJ,SCA | Semi-Constant Juvenile & Semi-Constant Adult Survival | 49 | 58 | ☐ SCJ,SCA M | |
| TSJ,CA | Time-Specific Juvenile & Constant Adult Survival | 6 | 121 | ☑ TSJ,CA Model | |

**Population Estimates from Top Model**

| Year | Posthunt Population Est. | | Trend Count | Predicted Prehunt Population | | | | Predicted Posthunt Population | | | | Objective |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Field Est | Field SE | | Juveniles | Total Males | Females | Total | Juveniles | Total Males | Females | Total | |
| 1993 | | | | 635 | 709 | 1838 | 3181 | 620 | 397 | 1666 | 2683 | 3600 |
| 1994 | | | | 781 | 580 | 1675 | 3035 | 775 | 355 | 1618 | 2748 | 3600 |
| 1995 | | | | 634 | 480 | 1570 | 2685 | 631 | 293 | 1519 | 2443 | 3600 |
| 1996 | | | | 954 | 536 | 1594 | 3084 | 954 | 288 | 1572 | 2814 | 3600 |
| 1997 | | | | 892 | 439 | 1547 | 2879 | 892 | 305 | 1503 | 2701 | 3600 |
| 1998 | | | | 1156 | 665 | 1699 | 3519 | 1156 | 450 | 1699 | 3305 | 3600 |
| 1999 | | | | 961 | 707 | 1784 | 3452 | 961 | 452 | 1753 | 3165 | 3600 |
| 2000 | | | | 649 | 791 | 1914 | 3354 | 649 | 497 | 1855 | 3002 | 3600 |
| 2001 | | | | 661 | 631 | 1803 | 3094 | 661 | 423 | 1803 | 2886 | 3600 |
| 2002 | | | | 775 | 662 | 1853 | 3290 | 775 | 463 | 1851 | 3089 | 3600 |
| 2003 | | | | 829 | 730 | 1928 | 3486 | 829 | 552 | 1921 | 3301 | 3600 |
| 2004 | | | | 889 | 642 | 1824 | 3354 | 889 | 442 | 1791 | 3121 | 3600 |
| 2005 | | | | 1028 | 746 | 1910 | 3684 | 1013 | 582 | 1874 | 3468 | 3600 |
| 2006 | | | | 1214 | 804 | 1918 | 3936 | 1214 | 589 | 1899 | 3702 | 3600 |
| 2007 | | | | 795 | 751 | 1881 | 3428 | 793 | 581 | 1821 | 3194 | 3600 |
| 2008 | | | | 973 | 660 | 1730 | 3363 | 970 | 468 | 1679 | 3117 | 3600 |
| 2009 | | | | 832 | 642 | 1687 | 3161 | 824 | 413 | 1621 | 2858 | 3600 |
| 2010 | | | | 818 | 727 | 1770 | 3316 | 816 | 551 | 1707 | 3075 | 3600 |
| 2011 | | | | 951 | 711 | 1709 | 3371 | 939 | 532 | 1648 | 3119 | 3600 |
| 2012 | | | | 981 | 647 | 1610 | 3239 | 976 | 504 | 1536 | 3015 | 3600 |
| 2013 | | | | 886 | 630 | 1520 | 3036 | 879 | 487 | 1465 | 2832 | 3600 |
| 2014 | | | | | | | | | | | | 3600 |
| 2015 | | | | | | | | | | | | 3600 |
| 2016 | | | | | | | | | | | | 3600 |
| 2017 | | | | | | | | | | | | 3600 |
| 2018 | | | | | | | | | | | | 3600 |
| 2019 | | | | | | | | | | | | 3600 |
| 2020 | | | | | | | | | | | | 3600 |
| 2021 | | | | | | | | | | | | 3600 |
| 2022 | | | | | | | | | | | | 3600 |
| 2023 | | | | | | | | | | | | 3600 |
| 2024 | | | | | | | | | | | | 3600 |
| 2025 | | | | | | | | | | | | 3600 |

## Survival and Initial Population Estimates

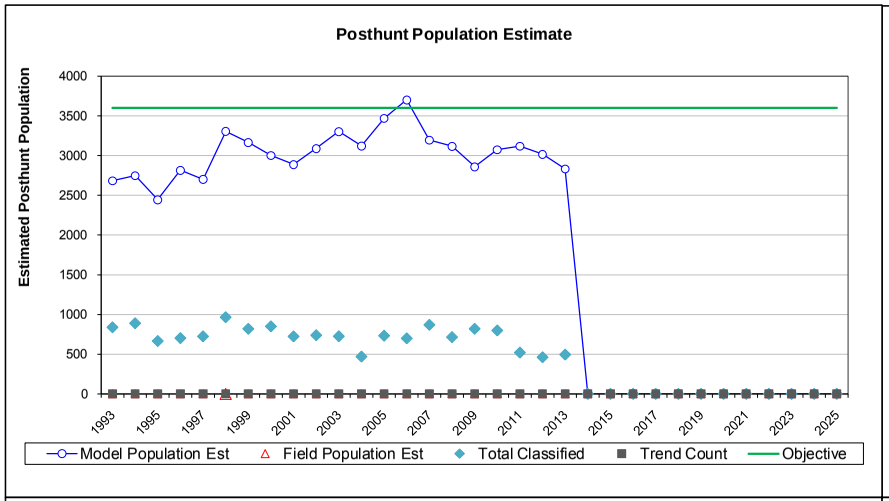
| Year | Annual Juvenile Survival Rates | | | Annual Adult Survival Rates | | |
|---|---|---|---|---|---|---|
| | Model Est | Field Est | SE | Model Est | Field Est | SE |
| 1993 | 0.76 | | | 0.86 | | |
| 1994 | 0.45 | | | 0.86 | | |
| 1995 | 0.90 | | | 0.86 | | |
| 1996 | 0.40 | | | 0.86 | | |
| 1997 | 0.90 | | | 0.86 | | |
| 1998 | 0.55 | | | 0.86 | | |
| 1999 | 0.84 | | | 0.86 | | |
| 2000 | 0.62 | | | 0.86 | | |
| 2001 | 0.90 | | | 0.86 | | |
| 2002 | 0.85 | | | 0.86 | | |
| 2003 | 0.40 | | | 0.86 | | |
| 2004 | 0.82 | | | 0.86 | | |
| 2005 | 0.60 | | | 0.86 | | |
| 2006 | 0.40 | | | 0.86 | | |
| 2007 | 0.40 | | | 0.86 | | |
| 2008 | 0.49 | | | 0.86 | | |
| 2009 | 0.90 | | | 0.86 | | |
| 2010 | 0.58 | | | 0.86 | | |
| 2011 | 0.40 | | | 0.86 | | |
| 2012 | 0.40 | | | 0.86 | | |
| 2013 | 0.90 | | | 0.86 | | |
| 2014 | | | | | | |
| 2015 | | | | | | |
| 2016 | | | | | | |
| 2017 | | | | | | |
| 2018 | | | | | | |
| 2019 | | | | | | |
| 2020 | | | | | | |
| 2021 | | | | | | |
| 2022 | | | | | | |
| 2023 | | | | | | |
| 2024 | | | | | | |
| 2025 | | | | | | |

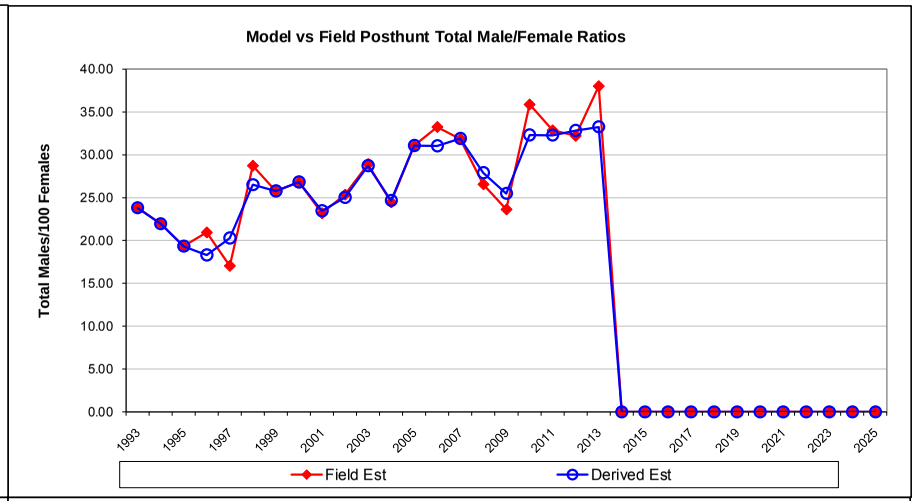
| Parameters: | Optim cells |
|---|---|
| | |
| Adult Survival = | 0.863 |
| Initial Total Male Pop/10,000 = | 0.040 |
| Initial Female Pop/10,000 = | 0.167 |

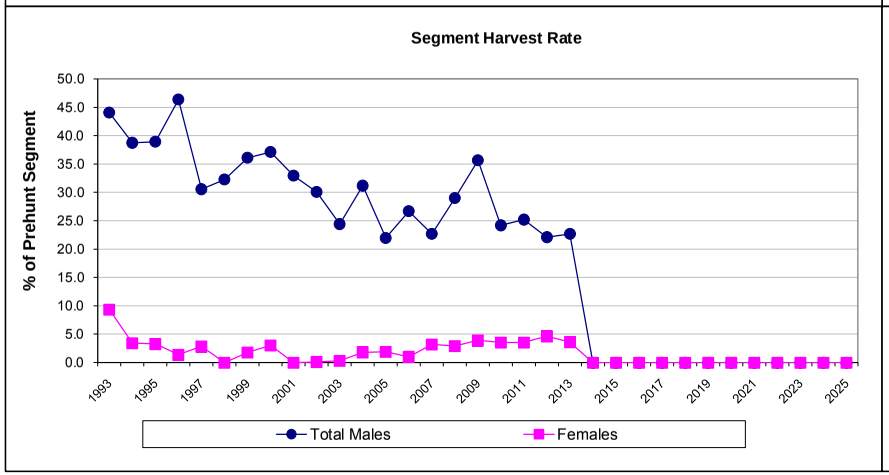
| MODEL ASSUMPTIONS | |
|---|---|
| Sex Ratio (% Males) = | 50% |
| Wounding Loss (total males) = | 10% |
| Wounding Loss (females) = | 10% |
| Wounding Loss (juveniles) = | 10% |

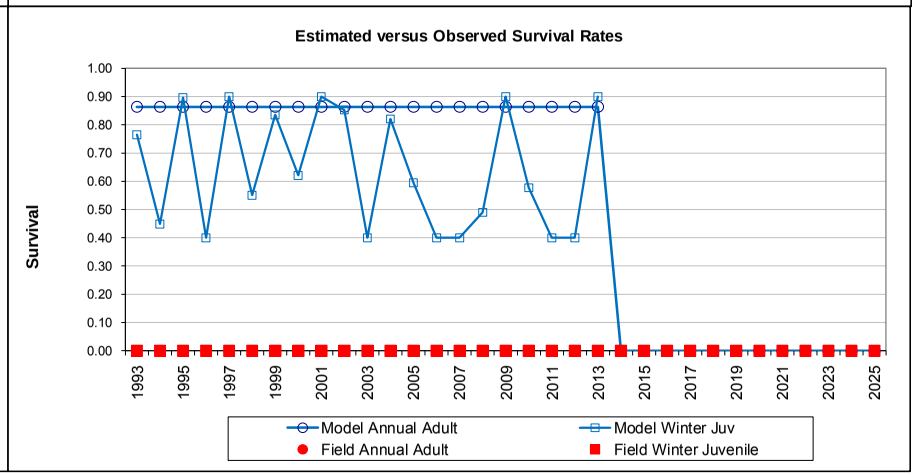
| Year | Classification Counts: Juvenile/Female Ratio | | | Classification Counts: Total Male/Female Ratio | | | Harvest | | | | Harvest: Segment Harvest Rate (% of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Derived Est | Field Est | Field SE | Derived Est | Field Est w/o bull adj | Field SE | Juv | Males | Females | Total Harvest | Total Males | Females |
| 1993 | | 37.24 | 3.13 | 23.80 | 23.80 | 2.38 | 13 | 284 | 156 | 453 | 44.1 | 9.3 |
| 1994 | | 47.90 | 3.68 | 21.95 | 21.95 | 2.26 | 5 | 204 | 52 | 261 | 38.7 | 3.4 |
| 1995 | | 41.55 | 3.77 | 19.32 | 19.32 | 2.36 | 3 | 170 | 47 | 220 | 38.9 | 3.3 |
| 1996 | | 60.72 | 5.02 | 18.30 | 20.93 | 2.56 | 0 | 226 | 20 | 246 | 46.4 | 1.4 |
| 1997 | | 59.37 | 4.80 | 20.29 | 17.03 | 2.20 | 0 | 122 | 40 | 162 | 30.6 | 2.8 |
| 1998 | | 68.02 | 4.82 | 26.50 | 28.72 | 2.74 | 0 | 195 | 0 | 195 | 32.3 | 0.0 |
| 1999 | | 54.85 | 4.33 | 25.77 | 25.77 | 2.67 | 0 | 232 | 29 | 261 | 36.1 | 1.8 |
| 2000 | | 34.98 | 3.00 | 26.81 | 26.81 | 2.54 | 0 | 267 | 53 | 320 | 37.1 | 3.0 |
| 2001 | | 36.64 | 3.32 | 23.45 | 23.18 | 2.51 | 0 | 189 | 0 | 189 | 33.0 | 0.0 |
| 2002 | | 41.86 | 3.67 | 25.02 | 25.34 | 2.68 | 0 | 181 | 2 | 183 | 30.1 | 0.1 |
| 2003 | | 43.13 | 3.82 | 28.72 | 28.91 | 2.97 | 0 | 162 | 6 | 168 | 24.4 | 0.3 |
| 2004 | | 49.63 | 5.24 | 24.67 | 24.44 | 3.36 | 0 | 182 | 30 | 212 | 31.2 | 1.8 |
| 2005 | | 54.04 | 4.58 | 31.06 | 31.06 | 3.21 | 14 | 149 | 33 | 196 | 22.0 | 1.9 |
| 2006 | | 63.94 | 5.43 | 31.03 | 33.24 | 3.53 | 0 | 195 | 18 | 213 | 26.7 | 1.0 |
| 2007 | | 43.55 | 3.55 | 31.89 | 31.85 | 2.91 | 2 | 155 | 55 | 212 | 22.7 | 3.2 |
| 2008 | | 57.73 | 4.84 | 27.89 | 26.55 | 2.94 | 3 | 174 | 46 | 223 | 29.0 | 2.9 |
| 2009 | | 50.85 | 4.04 | 25.48 | 23.62 | 2.49 | 7 | 208 | 60 | 275 | 35.7 | 3.9 |
| 2010 | | 47.82 | 4.03 | 32.30 | 35.86 | 3.35 | 2 | 160 | 57 | 219 | 24.2 | 3.5 |
| 2011 | | 56.93 | 5.71 | 32.28 | 32.85 | 3.99 | 11 | 163 | 55 | 229 | 25.2 | 3.5 |
| 2012 | | 63.56 | 6.64 | 32.82 | 32.20 | 4.25 | 5 | 130 | 68 | 203 | 22.1 | 4.6 |
| 2013 | | 60.00 | 6.20 | 33.24 | 38.00 | 4.58 | 6 | 130 | 50 | 186 | 22.7 | 3.6 |
| 2014 | | | | | | | | | | | | |
| 2015 | | | | | | | | | | | | |
| 2016 | | | | | | | | | | | | |
| 2017 | | | | | | | | | | | | |
| 2018 | | | | | | | | | | | | |
| 2019 | | | | | | | | | | | | |
| 2020 | | | | | | | | | | | | |
| 2021 | | | | | | | | | | | | |
| 2022 | | | | | | | | | | | | |
| 2023 | | | | | | | | | | | | |
| 2024 | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | |

## FIGURES



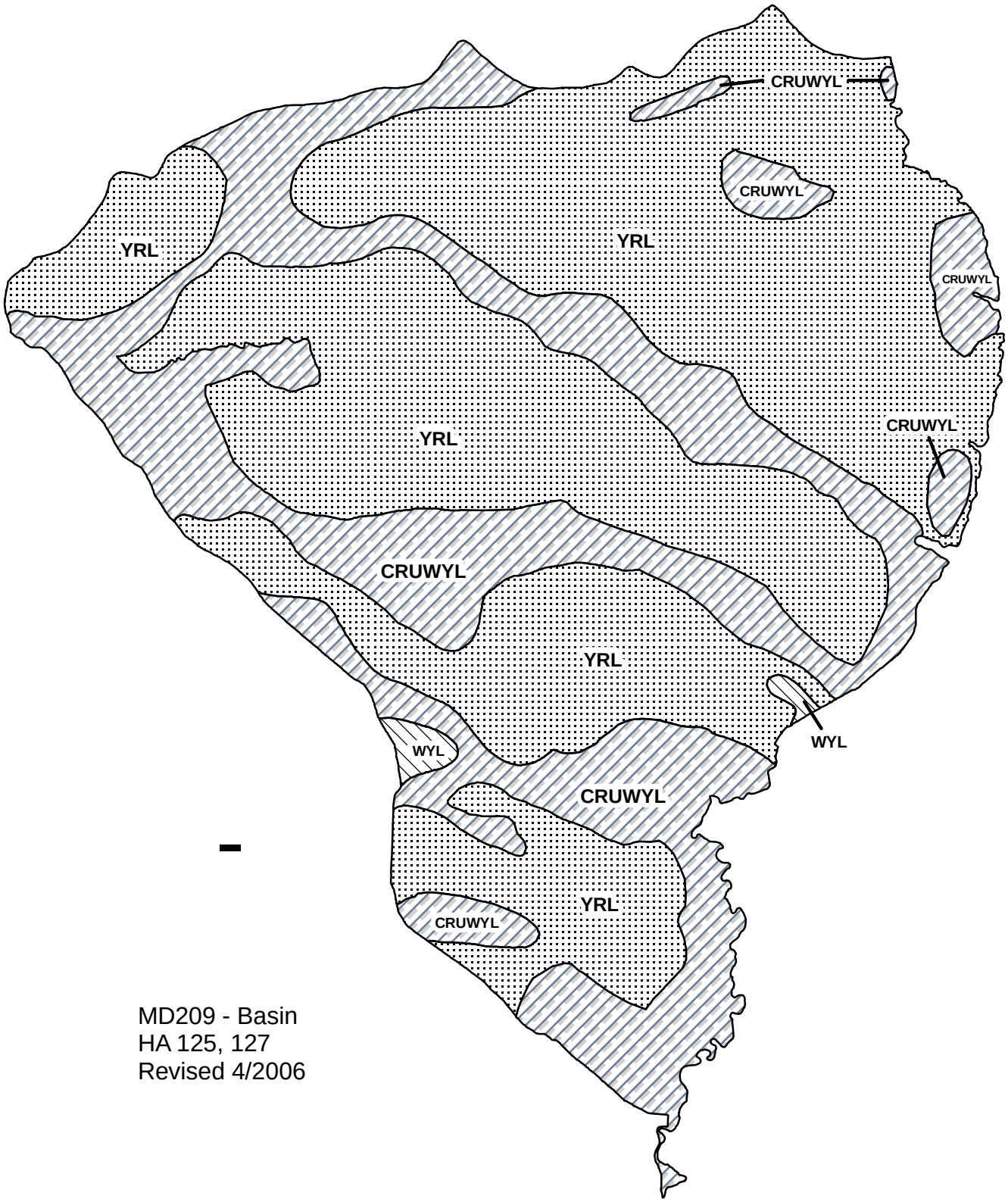




**Comments:**

## END




MD209 - Basin
HA 125, 127
Revised 4/2006

# 2012 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2012 - 5/31/2013

HERD: MD210 - GREYBULL RIVER

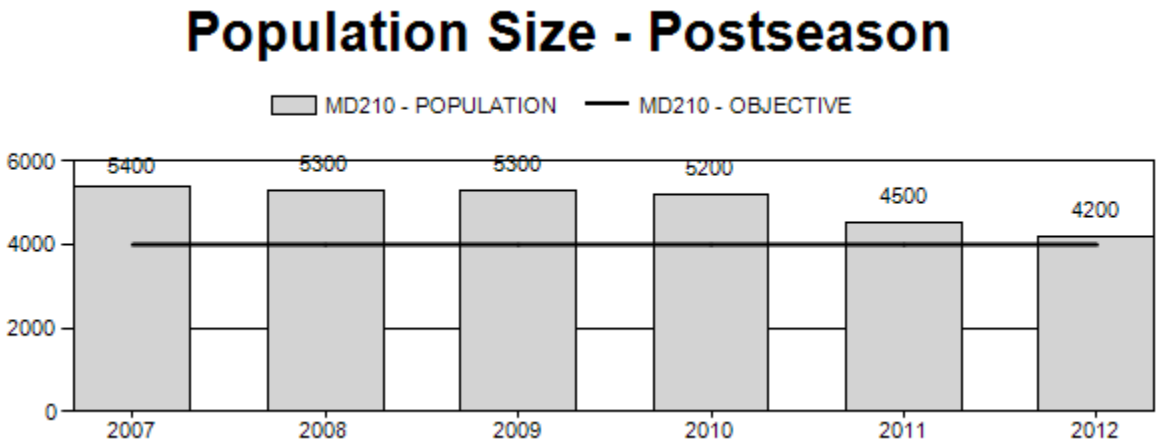
HUNT AREAS: 124, 165 | PREPARED BY: TOM EASTERLY

| | 2007 - 2011 Average | 2012 | 2013 Proposed |
|---|---|---|---|
| Population: | 5,140 | 4,200 | 4,200 |
| Harvest: | 824 | 726 | 640 |
| Hunters: | 1,101 | 1,093 | 1,000 |
| Hunter Success: | 75% | 66% | 64% |
| Active Licenses: | 1,281 | 1,322 | 1,150 |
| Active License Percent: | 64% | 55% | 56% |
| Recreation Days: | 4,665 | 5,055 | 5,500 |
| Days Per Animal: | 5.7 | 7.0 | 8.6 |
| Males per 100 Females | 33 | 28 | |
| Juveniles per 100 Females | 71 | 56 | |

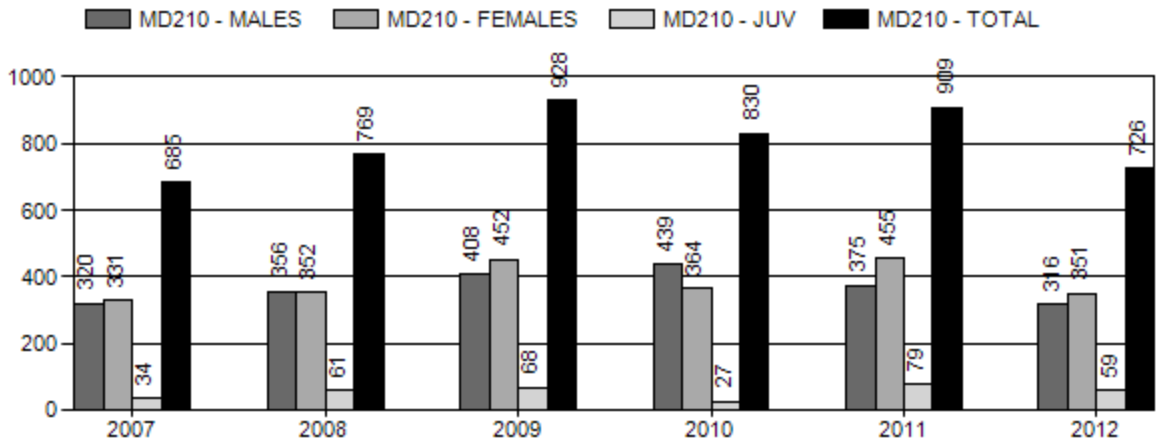
| | |
|---|---|
| Population Objective: | 4,000 |
| Management Strategy: | Recreational |
| Percent population is above (+) or below (-) objective: | 5% |
| Number of years population has been + or - objective in recent trend: | 10 |
| Model Date: | 3/1/2013 |

**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

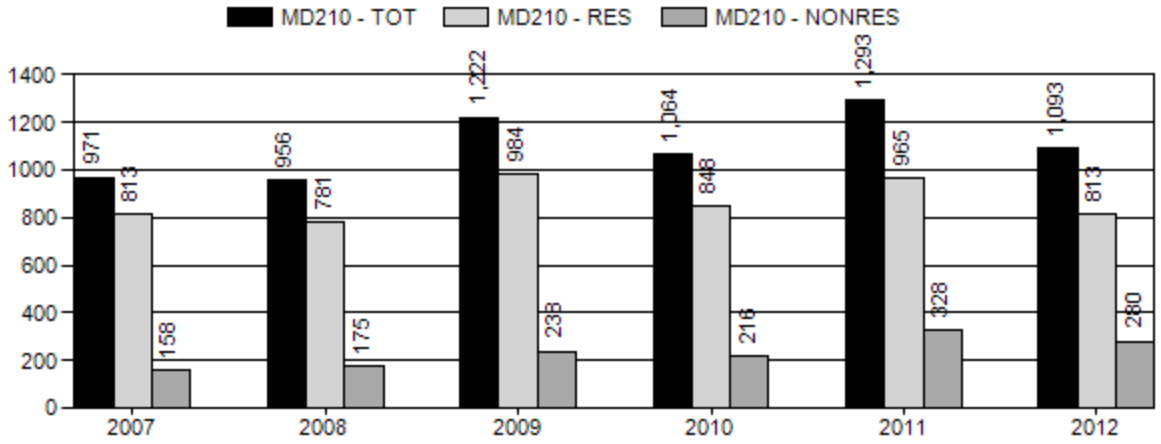
| | JCR Year | Proposed |
|---|---|---|
| Females ≥ 1 year old: | 14.8% | 13.8% |
| Males ≥ 1 year old: | 32.2% | 33.0% |
| Juveniles (< 1 year old): | 4.4% | 2.4% |
| Total: | 14.6% | 13.0% |
| Proposed change in post-season population: | -8.0% | +1.1% |



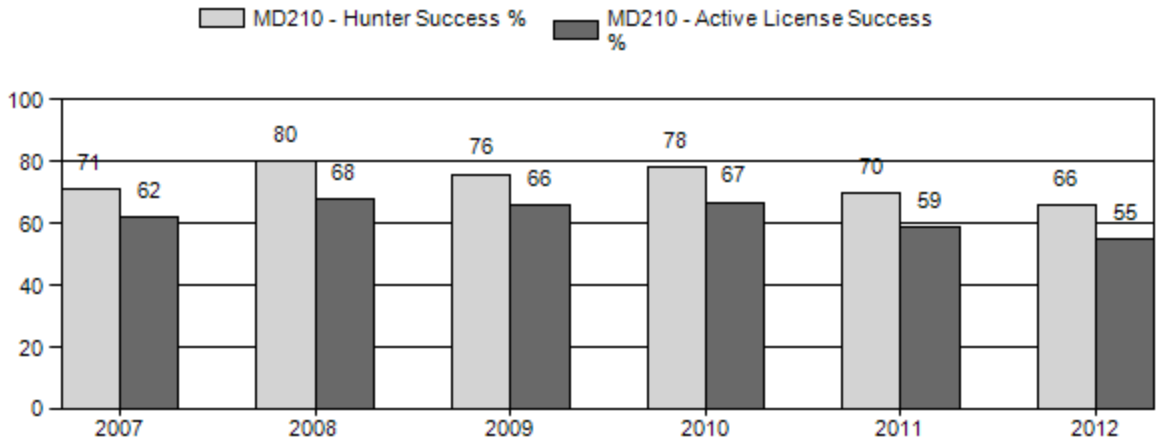
# Harvest



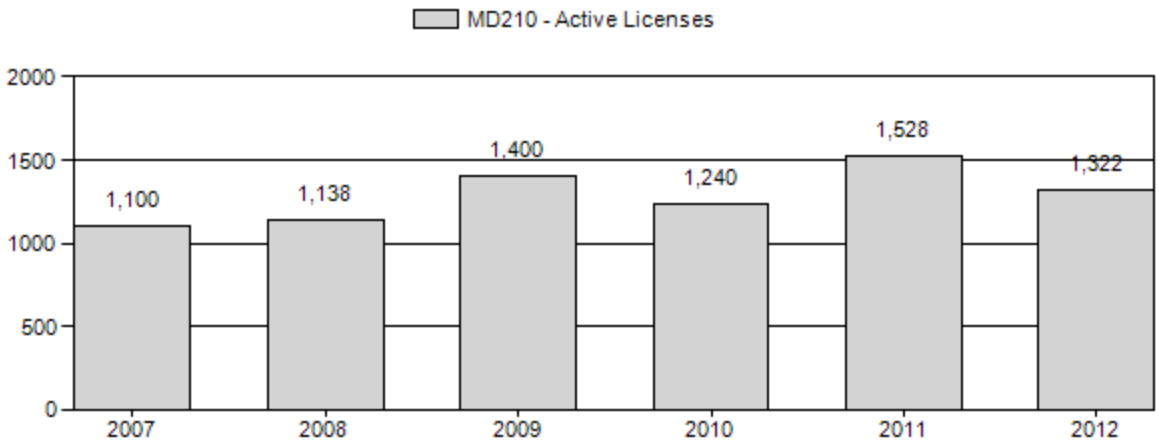

# Number of Hunters



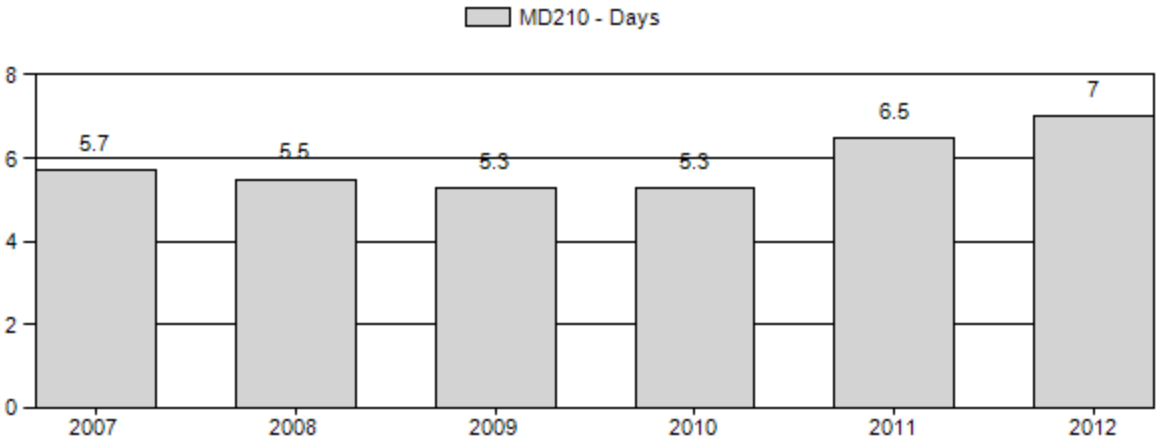

# Harvest Success



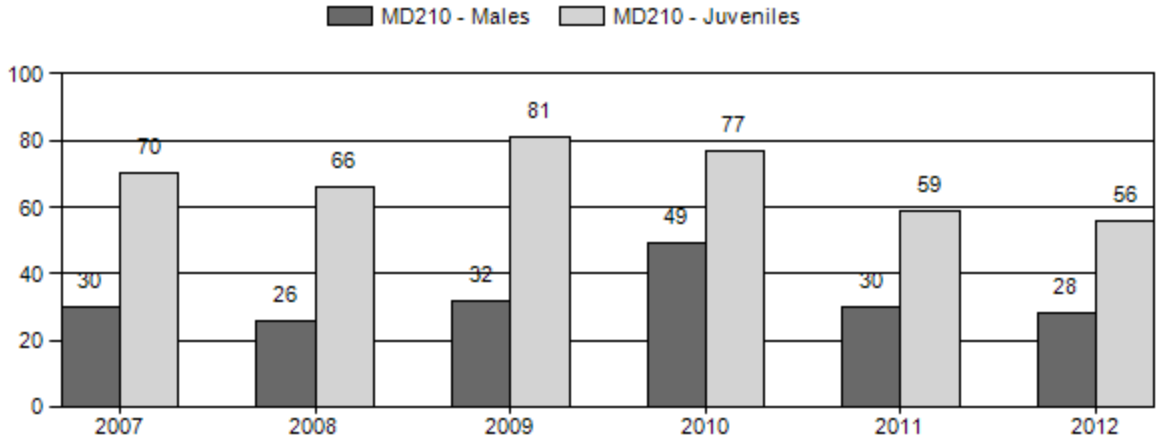
# Active Licenses




# Days per Animal Harvested




# Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD210 - GREYBULL RIVER

| Year | Post Pop | MALES | | | | FEMALES | | JUVENILES | | Tot Cls | Cls Obj | Males to 100 Females | | | | Young to | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ylg | Adult | Total | % | Total | % | Total | % | | | Ylng | Adult | Total | Conf Int | 100 Fem | Conf Int | 100 Adult |
| 2007 | 5,400 | 112 | 95 | 207 | 15% | 684 | 50% | 477 | 35% | 1,368 | 1,130 | 16 | 14 | 30 | ± 3 | 70 | ± 5 | 54 |
| 2008 | 5,300 | 52 | 94 | 146 | 14% | 554 | 52% | 367 | 34% | 1,067 | 1,006 | 9 | 17 | 26 | ± 3 | 66 | ± 5 | 52 |
| 2009 | 5,300 | 99 | 181 | 280 | 15% | 873 | 47% | 704 | 38% | 1,857 | 1,080 | 11 | 21 | 32 | ± 2 | 81 | ± 4 | 61 |
| 2010 | 5,200 | 87 | 139 | 226 | 22% | 465 | 44% | 357 | 34% | 1,048 | 985 | 19 | 30 | 49 | ± 5 | 77 | ± 6 | 52 |
| 2011 | 4,500 | 47 | 113 | 160 | 16% | 530 | 53% | 315 | 31% | 1,005 | 1,054 | 9 | 21 | 30 | ± 3 | 59 | ± 5 | 46 |
| 2012 | 4,200 | 65 | 94 | 159 | 15% | 571 | 54% | 320 | 30% | 1,050 | 959 | 11 | 16 | 28 | ± 3 | 56 | ± 4 | 44 |

## 2012 Postseason Classification by Hunt Area

for Mule Deer Herd MD210 - GREYBULL RIVER - Hunt Area ALL

| Area | Males | | | | Females | | Juveniles | | Total | Cls Obj | Males/100 | | | Young/100 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ylg | Adult | Total | % | # | % | # | % | | | Ylg | Adult | Males | Female | Adult |
| 124 | 49 | 62 | 111 | 13% | 459 | 55% | 262 | 31% | 832 | | 11 | 14 | 24 | 57 | 46 |
| 165 | 16 | 32 | 48 | 22% | 112 | 51% | 58 | 27% | 218 | | 14 | 29 | 43 | 52 | 36 |
| Total | 65 | 94 | 159 | 15% | 571 | 54% | 320 | 30% | 1050 | 959 | 11 | 16 | 28 | 56 | 44 |

## 2012 Harvest Date

for Mule Deer Herd MD210 – GREYBULL RIVER

| Area | Type | Active Lic/Htrs | Buck | Doe | Fawn | Total | Success | Days/ Harvest | Days | Licenses Sold |
|---|---|---|---|---|---|---|---|---|---|---|
| 124 EMBLEM | | | | | | | | | | |
| | General | 738 | 241 | 67 | 7 | 315 | 42.7% | 8.4 | 2643 | |
| | Type 6 | 328 | 0 | 205 | 41 | 246 | 75.0% | 5.1 | 1247 | 400 |
| | Type 7 | 59 | 0 | 26 | 4 | 30 | 50.8% | 10.1 | 302 | 100 |
| Pooled Total | | 936 (1125)* | 241 | 298 | 52 | 591 | 63.1% (52.5%)* | 7.1 | 4192 | |
| Pooled Resident | | 699 | 159 | 206 | 29 | 394 | 56.4% | 7.7 | 3038 | |
| Pooled Nonresident | | 237 | 82 | 92 | 23 | 197 | 83.1% | 5.9 | 1154 | |
| 165 YU BENCH | | | | | | | | | | |
| | Type 1 | 109 | 75 | 5 | 0 | 80 | 73.4% | 8.5 | 680 | 128 |
| | Type 6 | 88 | 0 | 48 | 7 | 55 | 62.5% | 3.3 | 183 | 150 |
| Pooled Total | | 158 (197)* | 75 | 53 | 7 | 135 | 85.4% (68.5%)* | 6.4 | 863 | |
| Pooled Resident | | 116 | 59 | 31 | 7 | 97 | 83.6% | 7.6 | 737 | |
| Pooled Nonresident | | 42 | 16 | 22 | 0 | 38 | 90.5% | 3.3 | 126 | |
| 2012 Hunt Area Total | | 1094 (1322)* | 316 | 351 | 59 | 726 | 66.4% (54.9%)* | 7 | 5055 | 778 |
| 2012 Herd Total | | 1093 (1322)* | 316 | 351 | 59 | 726 | 66.4% (54.9%)* | 7 | 5055 | 778 |

*Active Licenses

## 2013 HUNTING SEASONS
## Greybull River Mule Deer Herd Unit (MD210)

| Hunt Area | Type | Dates of Seasons | | Quota | Limitations |
|---|---|---|---|---|---|
| | | Opens | Closes | | |
| 124 | | Nov. 1 | Nov. 10 | | General license; any deer |
| | 3 | Nov. 1 | Nov. 30 | 50 | Limited quota licenses; any white-tailed deer |
| | 6 | Oct. 1 | Nov. 30 | 250 | Limited quota licenses; doe or fawn valid on or within one-half (½) mile of irrigated land |
| | 7 | Nov. 1 | Nov. 30 | 250 | Limited quota licenses; doe or fawn valid west of Wyoming Highway 30 and Big Horn County Road 8, on or within one-half (½) mile of irrigated land |
| | 8 | Oct. 1 | Nov. 30 | 200 | Limited quota licenses; doe or fawn white-tailed deer |
| 165 | 1 | Oct. 15 | Oct. 31 | 125 | Limited quota licenses; any deer |
| | 3 | Oct. 15 | Nov. 30 | 75 | Limited quota licenses; any white-tailed deer |
| | 6 | Oct. 15 | Oct. 31 | 75 | Limited quota licenses; doe or fawn valid on private land |
| | 8 | Nov. 1 | Nov. 30 | 100 | Limited quota licenses; doe or fawn white-tailed deer |
| **Archery:** | | | | | |
| 124, 165 | | Sep. 1 | Sep. 30 | | Refer to Section 3 of this Chapter |

| Hunt Area | Type | Changes from 2012 |
|---|---|---|
| 124 | 6 | -150 |
| | 7 | +150 |
| 165 | 6 | -75 |
| | 8 | +100 |
| Total | 6 | -225 |
| | 7 | +150 |
| | 8 | +100 |

**Management Evaluation**
**Current Management Objective: 4,000**
**2012 Postseason Population Estimate: 4,500**
**2013 Proposed Postseason Population Estimate: 4,500**

**Herd Unit Issues.** The population objective for the Greybull River mule deer herd was increased (from 3000) to 4,000 deer in 1994 after revisions to the POP-II model. The population objective remained unchanged following reviews in 2002 and 2007. This herd unit is managed for recreational hunting.

Anthropomorphic factors are probably having only a slight influence on survival and productivity of this herd. There are several oil/gas wells scattered across the herd unit and one major field (Oregon Basin). Urban expansion has not been a major concern in the area. Although agriculture has altered riparian areas, farming has increased the amount of forage for deer. Landowner tolerance of deer in crops is low.

**Weather.** Habitat quality is probably most affected by desert-like conditions (< 12" annual precipitation) and poor soils. Both factors have allowed cheatgrass to invade and dominate some sites. Drought conditions occurred in 2000-04 and 2012. Affects of drought on upland vegetation resulted in a shift of deer to agricultural fields. In response, the number of doe/fawn licenses has been increased throughout the herd unit.

**Habitat.** Although little data were collected to assess degree of impact, drought affected vegetative production across the Bighorn Basin, especially on interior portions of the Basin. There is one sagebrush browse transect in this herd unit (Oregon Basin), but it was established in an area of low deer density (pronghorn antelope winter range). Mortality of individual sagebrush plants and increased precipitation in 2005, 2007, and 2009-11 allowed for increased growth of herbaceous vegetation and new growth of sagebrush and other shrub species. The resulting decrease in density of older sagebrush and increase in overall plant diversity may have long-term benefits for deer habitat. During drought, mule deer shifted from unproductive desert habitats on BLM land to irrigated crop lands. They remain closely associated to crop land.

**Field Data.** Classification data has been used to monitor the population. Classification surveys were only conducted from the ground, so there is no measure of effort between years. Hunting seasons lasted the entire month of November and classification surveys occurred in December (late in rut or after). By then, deer along the Greybull River do not come out of heavy cover until a few minutes before dark, so classification surveys can be strung out over the entire month. Chance of missing dominant bucks increases later in December, therefore little effort has been put forth to survey areas away from crop land due to low deer densities.

We assumed number of deer classified can be used as an index to population level. The number of deer classified steadily increased from 1995 (~800 deer) to 2009 (1857 deer), but has since decreased to about 1,000 deer during the 2010-2012 surveys. This herd is highly productive since they rely on irrigated crops and have a dependable water sources (river and irrigation systems). On average (1993-2012), 67 fawns:100 does were observed. Unsworth et al. (1999) suggests that a winter fawn:doe ratio above 66:100 would result in an increasing population. Even during drought (2000-04), the fawn ratios remained high, barely dropping below 66:100 in three years (average=65:100).

Buck numbers appear to have increased in this herd over the past 20 years. Between 1993 and 2005, buck:doe ratios rarely exceeded 25:100 (range=18-26). After drought conditions subsided, buck ratios increased and have not dropped below 25:100 since. On average, there were 32 bucks:100 does observed (range=26-49) between 2005-2012.

**Harvest Data.** Conservative hunting of bucks and high numbers of doe/fawn licenses could be maintaining high buck ratios. As the number of complaints from landowners increased, the number of doe/fawn licenses increased. As the number of licenses issued increased, so does harvest of does. Doe/fawn licenses used to decrease the number of deer using crops also had major impacts on the population level since most of the deer are concentrated on private land. Number of doe/fawn licenses issued may also have affected number of deer classified (Fig. 1). Thus, the increase in buck:doe ratios observed after 2005 was probably a reflection of fewer does in the population rather than an increase in number of bucks.

Buck harvest is influenced more by hunter effort, weather, season dates, harvest of crops (corn), and private land access than a reflection of population level. Harvest in Area 124 (general license) is large enough to mask trends in Area 165 (limited quota). General license seasons (Area 124), valid for bucks, have remained fairly constant over the years, ranging from 7 to 10 days (1990-present), opening Nov. 1. Area 165 has been limited quota hunting since 1987, with 100-150 licenses typically issued. Buck seasons in Area 165 (Type 1) have opened Nov. 1 (1987-89), Oct. 1 (1990-2000), or Oct. 15 (2001-present).

Between 1993 to 1998, buck harvest dramatically declined (from 485 to 214); however, different harvest survey contractors were used during that time to calculate harvest survey data. Following a large, unexpected increase in 1999, harvest of bucks has been somewhat stable; typically ranging between 300-400 bucks. There was a slight decrease in buck harvest during drought, then a steady increase between 2007 to 2010. Buck harvest has decreased since 2010 (Fig. 2). During 1993-2004, harvest of bucks was greater (1.5x) than number of does harvested. With increased doe/fawn licenses, the number of bucks and does harvested converged and doe harvest surpassed buck harvest in four of the past six years (2007-2012).

High harvest to address crop depredation limits the "trophy" potential of this herd. Most (90-100%) of the bucks being harvested are fairly small in antler width (Fig. 3). Likewise, most (60-80%) of the bucks classified are also in the smaller size classes (Fig. 4). Antler size class is used as an index to age class. Hunters have complained about too few mature bucks in this herd.

**Population.** Spreadsheet models have replaced POP-II for estimating populations of big game species. The models for the Greybull River herd follow population trends that field personnel estimate, however, the extent of the model's estimate is higher than expected. The model (constant juvenile, constant adult survival) used for this herd unit estimated the population increased from 1995 (3600 deer) to 2007 (5400 deer), then stabilized at about 5300 deer (2008-10) before declining to 4200 deer post-season 2012. That trend follows the trend in classification totals to some extent. One other model (semi-constant juvenile, semi-constant adult survival [SCJ,SCA]) follows that trend but with higher populations and a decline to 4000 deer (population objective) following the 2010-11 winter. The time-specific juvenile, constant adult survival model (TSJ,CA) provided a lower population estimate (averaging just under 4000 deer), but does not estimate the increasing trend observed in the late 2000s. All models show a decline in the population after 2010 possibly due to high doe harvest. Winter 2010-11 may have also

had lower survival (which is included in the SCJ,SCA and TSJ,CA models) due to deep, crusted snow.

**Management Summary.** The season planned for 2013 should stabilize this population near objective (within 10%). High numbers of doe/fawn licenses will be issued again in 2013 to address landowner concerns. Hunters have commented that fewer deer can be found since the 2010-11 winter. Many of them want fewer does harvested to increase the population. Many hunters also have requested more time to harvest bucks. If buck ratios remain high, some changes may be possible. This herd unit will be reviewed in 2015 to determine if the population objective is proper and in line with desires of hunters, landowners and others.

**Literature Cited**

Unsworth, J.W., D.F. Pac, G. C. White, and R.M. Bartman. 1999. Mule deer survival in Colorado, Idaho, and Montana. Journal of Wildlife Management 36:315-326.

Figure 1. Number of mule deer classified and harvested in the Greybull River herd unit, 1993-2012

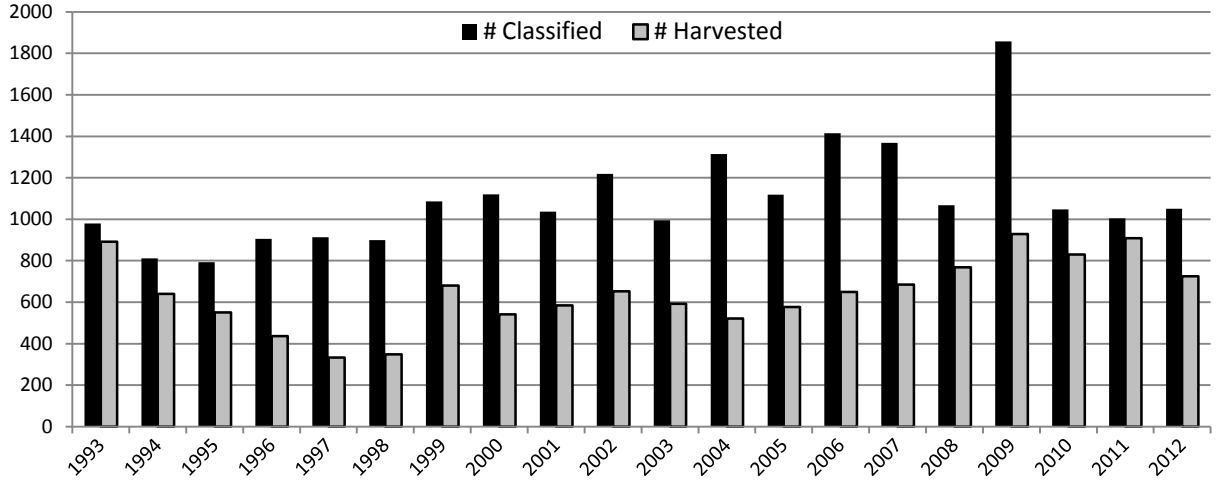



Figure 2. Harvest of buck mule deer from the Greybull River herd unit (Areas 124 and 165), 1993-2012.

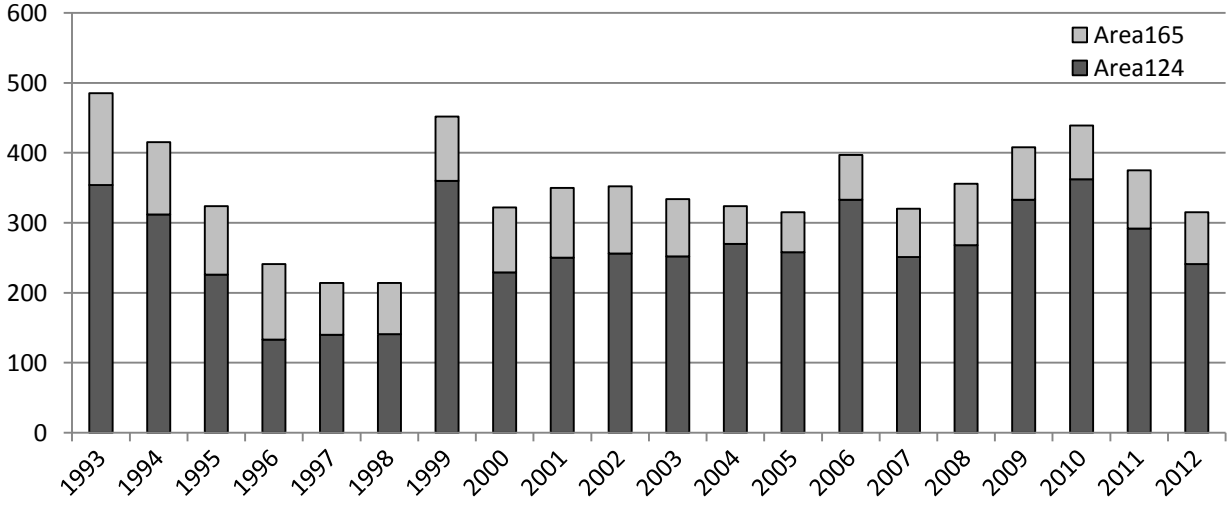
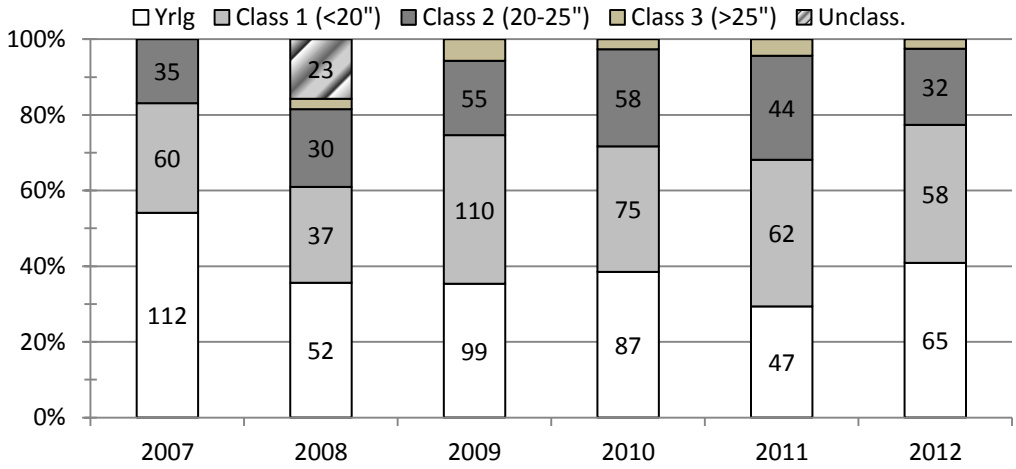


Figure 3. Size class of harvested bucks checked in the field in the Greybull River herd unit, 2006-2012.

Figure 4. Size class of bucks classified in the Greybull River herd unit, 2007-2012.



| INPUT | |
|---|---|
| **Species:** | Deer |
| **Biologist:** | Tom Easterly |
| **Herd Unit & No.:** | Greybull River 210 |
| **Model date:** | 03/01/13 |

☐ Clear form

| MODELS SUMMARY | | Fit | Relative AICc | Check best model to create report | Notes |
|---|---|---|---|---|---|
| **CJ,CA** | **Constant Juvenile & Adult Survival** | 74 | 83 | ☑ CJ,CA Model | |
| **SCJ,SCA** | **Semi-Constant Juvenile & Semi-Constant Adult Survival** | 141 | 152 | ☐ SCJ,SCA Mod | |
| **TSJ,CA** | **Time-Specific Juvenile & Constant Adult Survival** | 24 | 139 | ☐ TSJ,CA Model | |

**Population Estimates from Top Model**

| Year | Posthunt Population Est. | | Trend Count | Predicted Prehunt Population | | | Total | Predicted Posthunt Population | | | Total | Objective |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Field Est | Field SE | | Juveniles | Total Males | Females | | Juveniles | Total Males | Females | | |
| **1993** | | | | 1486 | 1099 | 2408 | 4993 | 1422 | 566 | 2024 | 4012 | 4000 |
| **1994** | | | | 1276 | 891 | 2272 | 4440 | 1258 | 434 | 2044 | 3736 | 4000 |
| **1995** | | | | 1206 | 726 | 2249 | 4182 | 1179 | 369 | 2028 | 3577 | 4000 |
| **1996** | | | | 1541 | 645 | 2215 | 4401 | 1534 | 379 | 2009 | 3922 | 4000 |
| **1997** | | | | 1550 | 743 | 2285 | 4578 | 1536 | 507 | 2168 | 4211 | 4000 |
| **1998** | | | | 1736 | 864 | 2437 | 5037 | 1727 | 629 | 2298 | 4655 | 4000 |
| **1999** | | | | 1721 | 1028 | 2608 | 5357 | 1670 | 530 | 2408 | 4608 | 4000 |
| **2000** | | | | 1676 | 920 | 2697 | 5293 | 1630 | 565 | 2502 | 4697 | 4000 |
| **2001** | | | | 1805 | 943 | 2776 | 5524 | 1750 | 558 | 2573 | 4881 | 4000 |
| **2002** | | | | 1622 | 966 | 2874 | 5461 | 1585 | 579 | 2580 | 4744 | 4000 |
| **2003** | | | | 1744 | 944 | 2839 | 5528 | 1702 | 577 | 2596 | 4875 | 4000 |
| **2004** | | | | 1747 | 972 | 2884 | 5602 | 1719 | 615 | 2694 | 5028 | 4000 |
| **2005** | | | | 2007 | 1013 | 2980 | 6000 | 1943 | 666 | 2756 | 5365 | 4000 |
| **2006** | | | | 1782 | 1116 | 3095 | 5994 | 1739 | 680 | 2861 | 5280 | 4000 |
| **2007** | | | | 1976 | 1078 | 3144 | 6199 | 1939 | 726 | 2780 | 5445 | 4000 |
| **2008** | | | | 1875 | 1173 | 3117 | 6165 | 1808 | 781 | 2730 | 5319 | 4000 |
| **2009** | | | | 2123 | 1192 | 3037 | 6352 | 2048 | 743 | 2540 | 5331 | 4000 |
| **2010** | | | | 1962 | 1215 | 2917 | 6094 | 1932 | 732 | 2517 | 5181 | 4000 |
| **2011** | | | | 1493 | 1177 | 2866 | 5535 | 1406 | 764 | 2365 | 4535 | 4000 |
| **2012** | | | | 1304 | 1075 | 2591 | 4971 | 1237 | 729 | 2207 | 4173 | 4000 |
| **2013** | | | | 1523 | 999 | 2400 | 4922 | 1479 | 669 | 2070 | 4218 | 4000 |
| **2014** | | | | | | | | | | | | |
| **2015** | | | | | | | | | | | | |
| **2016** | | | | | | | | | | | | |
| **2017** | | | | | | | | | | | | |
| **2018** | | | | | | | | | | | | |
| **2019** | | | | | | | | | | | | |
| **2020** | | | | | | | | | | | | |
| **2021** | | | | | | | | | | | | |
| **2022** | | | | | | | | | | | | |
| **2023** | | | | | | | | | | | | |
| **2024** | | | | | | | | | | | | |
| **2025** | | | | | | | | | | | | |

## Survival and Initial Population Estimates

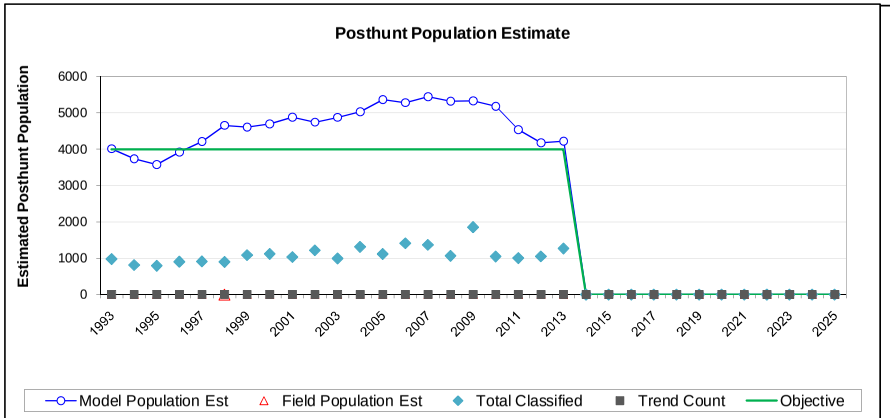
| Year | Annual Juvenile Survival Rates | | | Annual Adult Survival Rates | | |
|---|---|---|---|---|---|---|
| | Model Est | Field Est | SE | Model Est | Field Est | SE |
| 1993 | 0.50 | | | 0.95 | | |
| 1994 | 0.50 | | | 0.95 | | |
| 1995 | 0.50 | | | 0.95 | | |
| 1996 | 0.50 | | | 0.95 | | |
| 1997 | 0.50 | | | 0.95 | | |
| 1998 | 0.50 | | | 0.95 | | |
| 1999 | 0.50 | | | 0.95 | | |
| 2000 | 0.50 | | | 0.95 | | |
| 2001 | 0.50 | | | 0.95 | | |
| 2002 | 0.50 | | | 0.95 | | |
| 2003 | 0.50 | | | 0.95 | | |
| 2004 | 0.50 | | | 0.95 | | |
| 2005 | 0.50 | | | 0.95 | | |
| 2006 | 0.50 | | | 0.95 | | |
| 2007 | 0.50 | | | 0.95 | | |
| 2008 | 0.50 | | | 0.95 | | |
| 2009 | 0.50 | | | 0.95 | | |
| 2010 | 0.50 | | | 0.95 | | |
| 2011 | 0.50 | | | 0.95 | | |
| 2012 | 0.50 | | | 0.95 | | |
| 2013 | 0.50 | | | 0.95 | | |
| 2014 | | | | | | |
| 2015 | | | | | | |
| 2016 | | | | | | |
| 2017 | | | | | | |
| 2018 | | | | | | |
| 2019 | | | | | | |
| 2020 | | | | | | |
| 2021 | | | | | | |
| 2022 | | | | | | |
| 2023 | | | | | | |
| 2024 | | | | | | |
| 2025 | | | | | | |

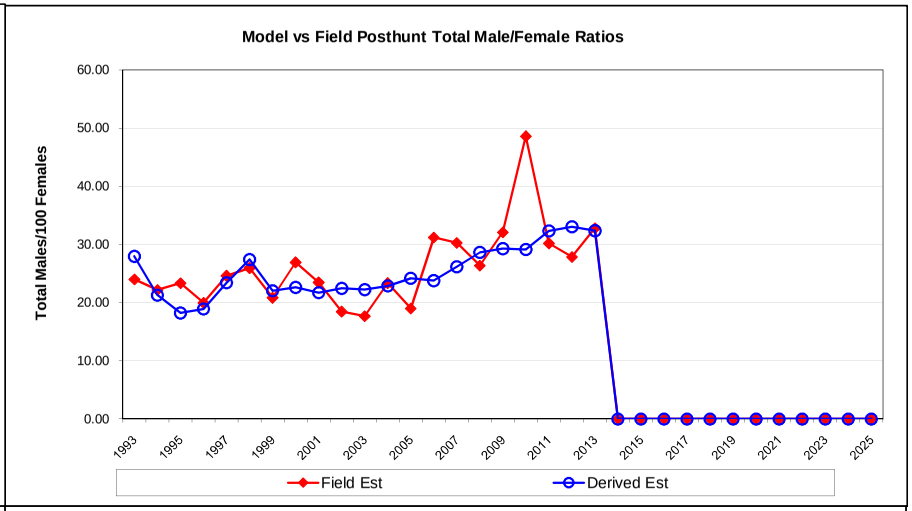
| Parameters: | Optim cells |
|---|---|
| Juvenile Survival = | 0.500 |
| Adult Survival = | 0.947 |
| Initial Total Male Pop/10,000 = | 0.057 |
| Initial Female Pop/10,000 = | 0.202 |

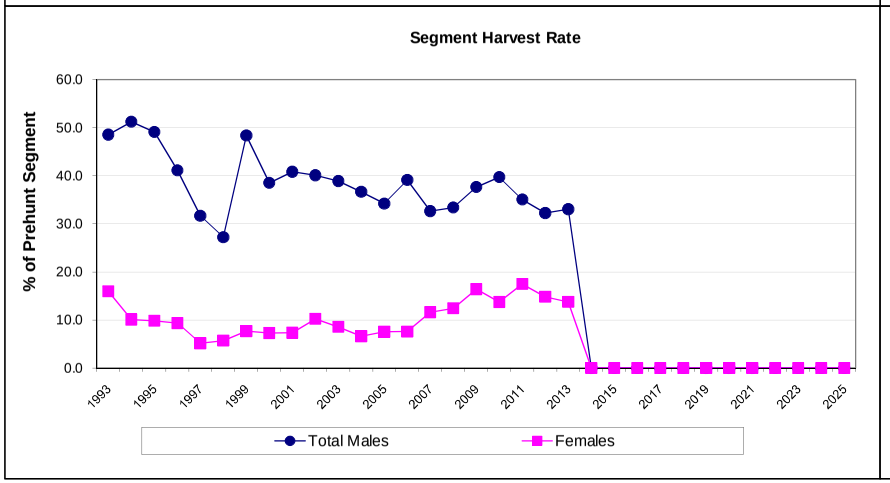
| MODEL ASSUMPTIONS | |
|---|---|
| Sex Ratio (% Males) = | 50% |
| Wounding Loss (total males) = | 10% |
| Wounding Loss (females) = | 10% |
| Wounding Loss (juveniles) = | 10% |

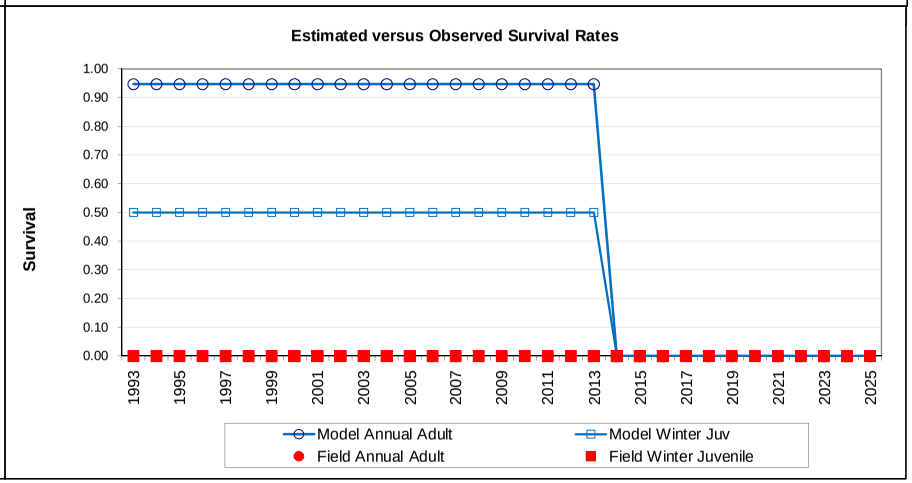
| Classification Counts | | | | | | | Harvest | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Juvenile/Female Ratio | | | Total Male/Female Ratio | | | | | | | Segment Harvest Rate (% of | |
| | Derived Est | Field Est | Field SE | Derived Est | Field Est w/o bull adj | Field SE | Juv | Males | Females | Total Harvest | Total Males | Females |
| 1993 | | 70.24 | 4.87 | 27.94 | 24.01 | 2.43 | 58 | | 349 | 892 | 48.5 | 15.9 |
| 1994 | | 61.54 | 4.74 | 21.26 | 22.17 | 2.48 | 17 | 485 | 208 | 640 | 51.2 | 10.1 |
| 1995 | | 58.12 | 4.59 | 18.21 | 23.34 | 2.57 | 25 | 415 | 201 | 550 | 49.1 | 9.8 |
| 1996 | | 76.36 | 5.40 | 18.89 | 19.96 | 2.28 | 7 | 324 | 188 | 436 | 41.1 | 9.3 |
| 1997 | | 70.88 | 5.09 | 23.40 | 24.63 | 2.56 | 12 | 241 | 107 | 333 | 31.7 | 5.2 |
| 1998 | | 75.17 | 5.43 | 27.37 | 25.95 | 2.70 | 8 | 214 | 126 | 348 | 27.2 | 5.7 |
| 1999 | | 69.35 | 4.54 | 22.03 | 20.84 | 2.10 | 47 | 214 | 182 | 681 | 48.4 | 7.7 |
| 2000 | | 65.18 | 4.30 | 22.60 | 26.93 | 2.42 | 41 | 322 | 178 | 541 | 38.5 | 7.3 |
| 2001 | | 68.02 | 4.60 | 21.69 | 23.48 | 2.31 | 50 | 350 | 185 | 585 | 40.8 | 7.3 |
| 2002 | | 61.45 | 3.83 | 22.43 | 18.46 | 1.80 | 33 | 352 | 267 | 652 | 40.1 | 10.2 |
| 2003 | | 65.56 | 4.47 | 22.22 | 17.68 | 1.96 | 38 | 334 | 221 | 593 | 38.9 | 8.6 |
| 2004 | | 63.82 | 3.86 | 22.85 | 23.36 | 2.03 | 25 | 324 | 173 | 522 | 36.7 | 6.6 |
| 2005 | | 70.51 | 4.51 | 24.17 | 18.98 | 1.96 | 58 | 315 | 204 | 577 | 34.2 | 7.5 |
| 2006 | | 60.79 | 3.64 | 23.76 | 31.21 | 2.36 | 39 | 397 | 213 | 649 | 39.1 | 7.6 |
| 2007 | | 69.74 | 4.16 | 26.13 | 30.26 | 2.40 | 34 | 320 | 331 | 685 | 32.6 | 11.6 |
| 2008 | | 66.25 | 4.46 | 28.61 | 26.35 | 2.45 | 61 | 356 | 352 | 769 | 33.4 | 12.4 |
| 2009 | | 80.64 | 4.08 | 29.25 | 32.07 | 2.20 | 68 | 408 | 452 | 928 | 37.7 | 16.4 |
| 2010 | | 76.77 | 5.40 | 29.11 | 48.60 | 3.94 | 27 | 439 | 364 | 830 | 39.7 | 13.7 |
| 2011 | | 59.43 | 4.23 | 32.30 | 30.19 | 2.72 | 79 | 375 | 455 | 909 | 35.1 | 17.5 |
| 2012 | | 56.04 | 3.91 | 33.00 | 27.85 | 2.50 | 61 | 315 | 349 | 725 | 32.2 | 14.8 |
| 2013 | | 71.47 | 4.44 | 32.33 | 32.81 | 2.65 | 40 | 300 | 300 | 640 | 33.0 | 13.8 |
| 2014 | | | | | | | | | | | | |
| 2015 | | | | | | | | | | | | |
| 2016 | | | | | | | | | | | | |
| 2017 | | | | | | | | | | | | |
| 2018 | | | | | | | | | | | | |
| 2019 | | | | | | | | | | | | |
| 2020 | | | | | | | | | | | | |
| 2021 | | | | | | | | | | | | |
| 2022 | | | | | | | | | | | | |
| 2023 | | | | | | | | | | | | |
| 2024 | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | |

## FIGURES



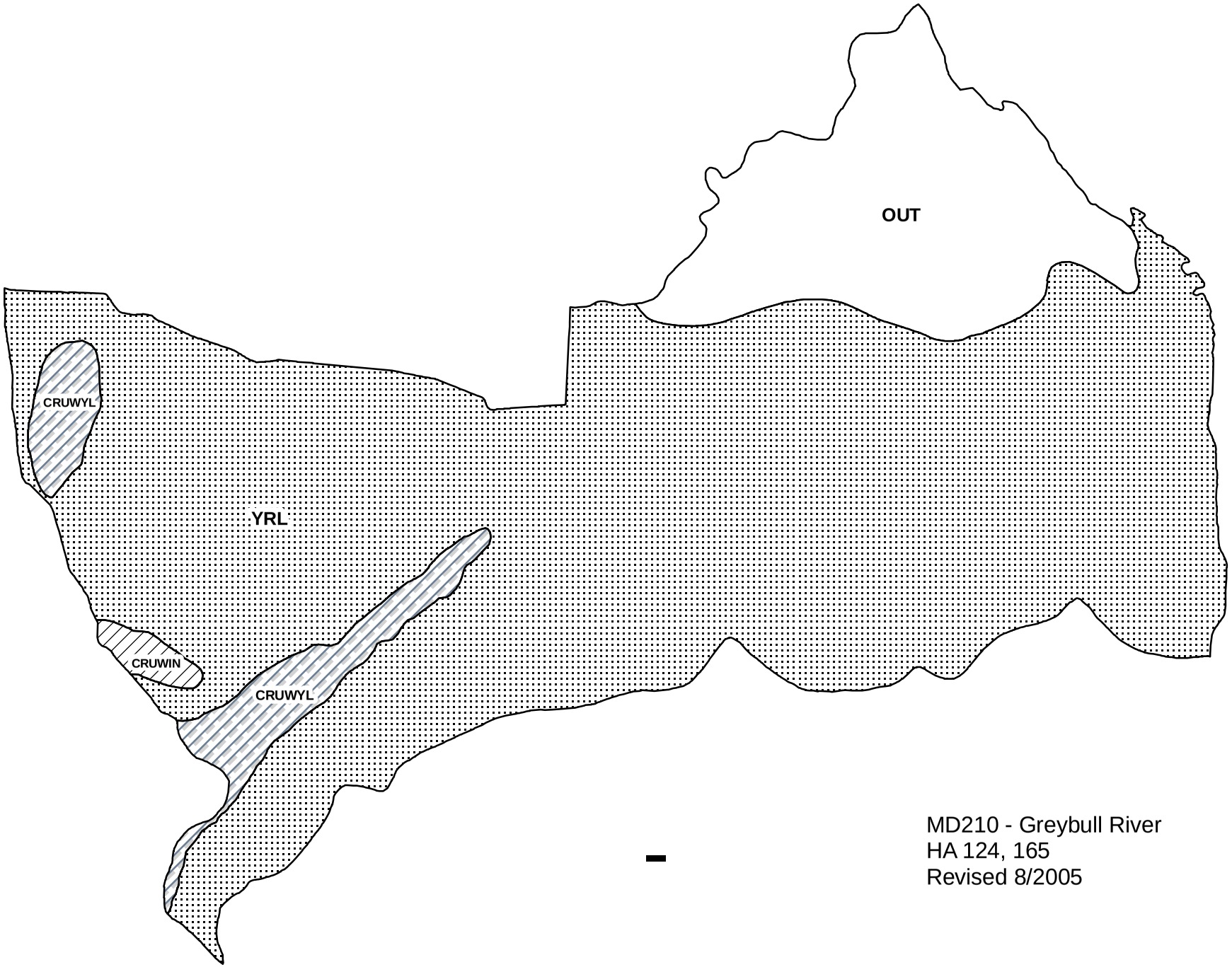




**Comments:**

## END




MD210 - Greybull River
HA 124, 165
Revised 8/2005

# 2012 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2012 - 5/31/2013

HERD: MD211 - SHOSHONE RIVER

HUNT AREAS: 122-123 | PREPARED BY: TOM EASTERLY

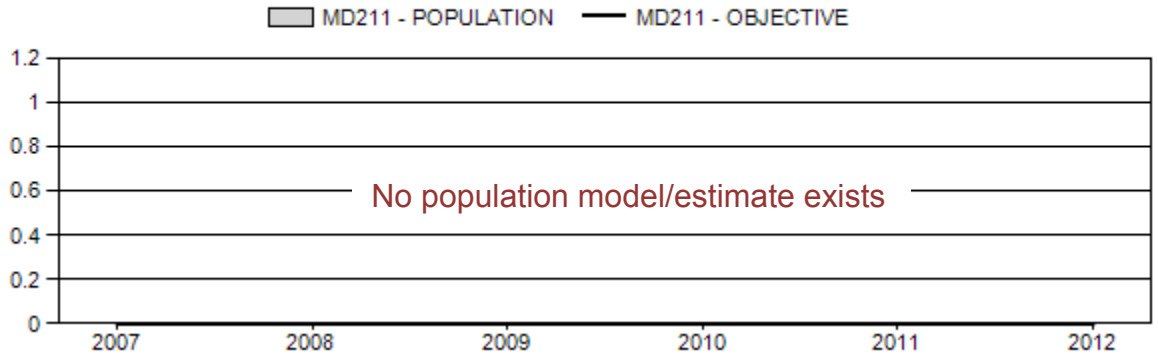
| | 2007 - 2011 Average | 2012 | 2013 Proposed |
|---|---|---|---|
| Population: | 0 | N/A | N/A |
| Harvest: | 648 | 785 | 900 |
| Hunters: | 1,229 | 1,399 | 1,450 |
| Hunter Success: | 53% | 56% | 62% |
| Active Licenses: | 1,279 | 1,511 | 1,500 |
| Active License Percent: | 51% | 52% | 60% |
| Recreation Days: | 4,673 | 5,340 | 5,500 |
| Days Per Animal: | 7.2 | 6.8 | 6.1 |
| Males per 100 Females | 28 | 24 | |
| Juveniles per 100 Females | 68 | 86 | |

| | |
|---|---|
| Population Objective: | 0 |
| Management Strategy: | Recreational |
| Percent population is above (+) or below (-) objective: | N/A% |
| Number of years population has been + or - objective in recent trend: | 0 |
| Model Date: | None |

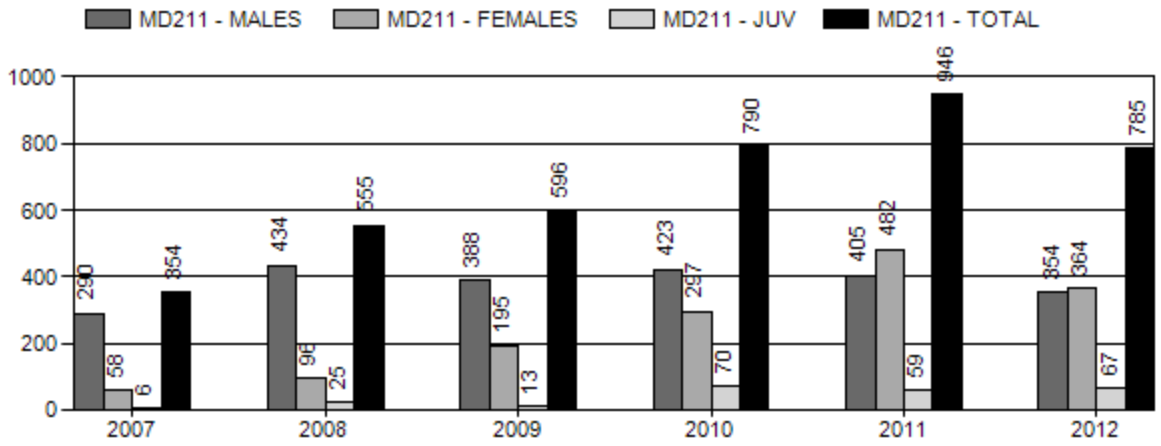
**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

| | JCR Year | Proposed |
|---|---|---|
| Females ≥ 1 year old: | na% | na% |
| Males ≥ 1 year old: | na% | na% |
| Juveniles (< 1 year old): | na% | na% |
| Total: | na% | na% |
| Proposed change in post-season population: | na% | na% |

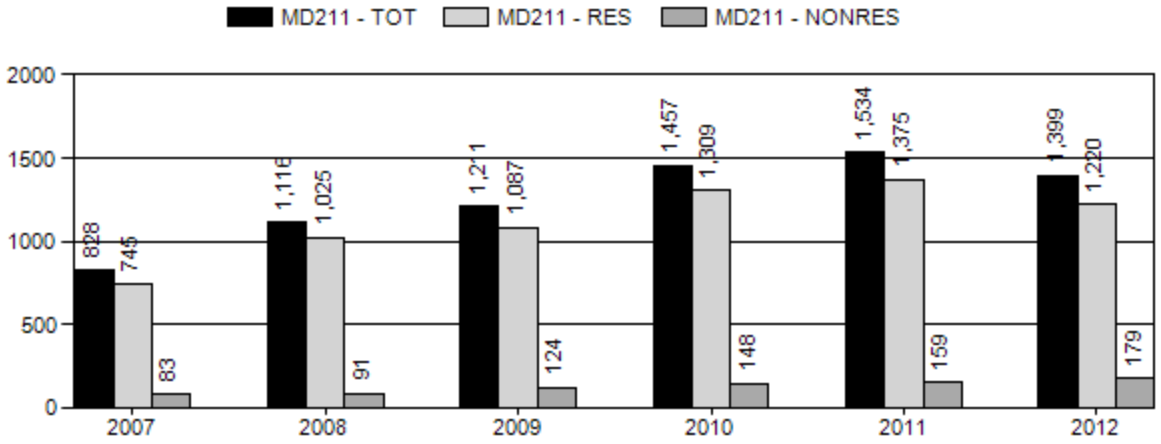
## Population Size - Postseason



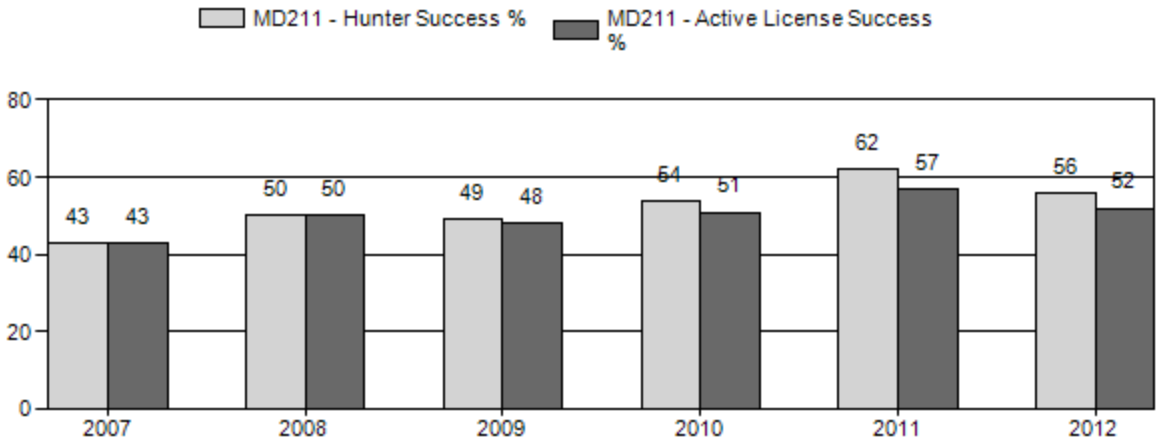
# Harvest



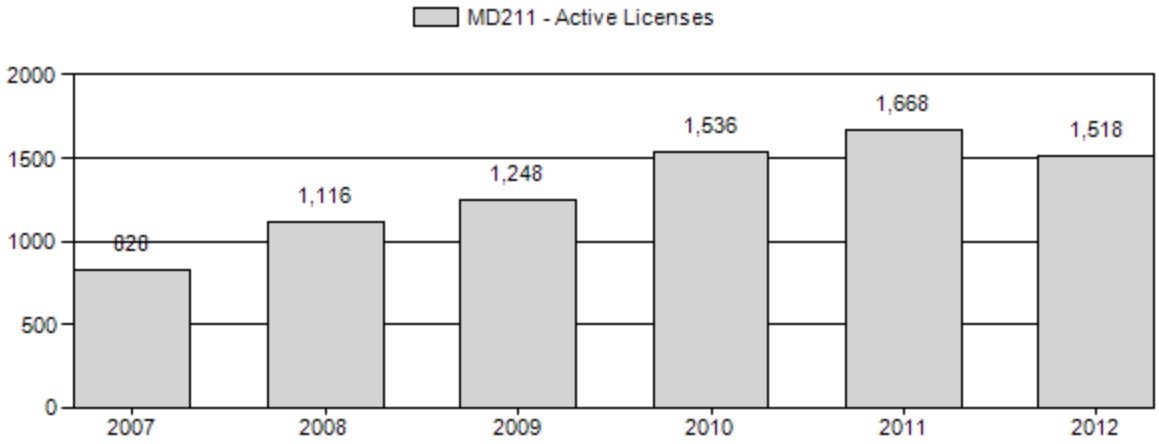

# Number of Hunters



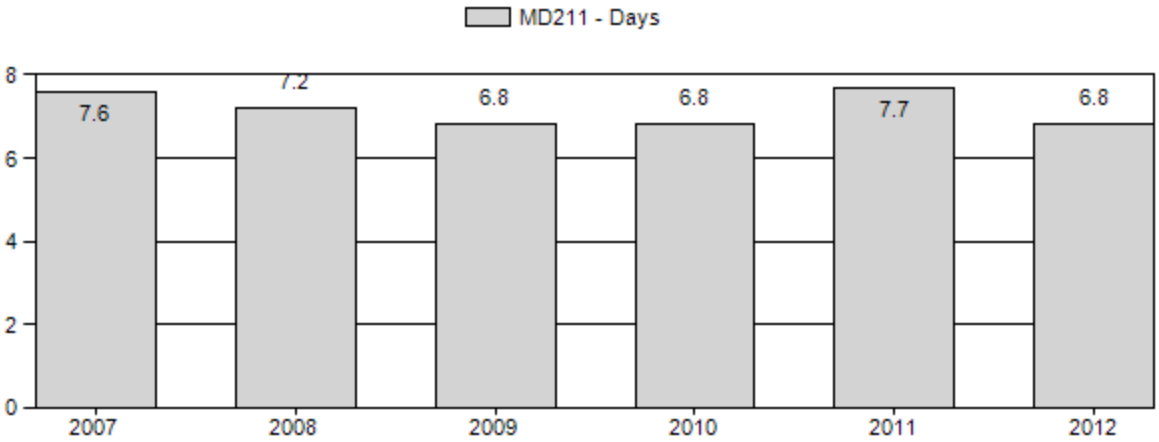

# Harvest Success



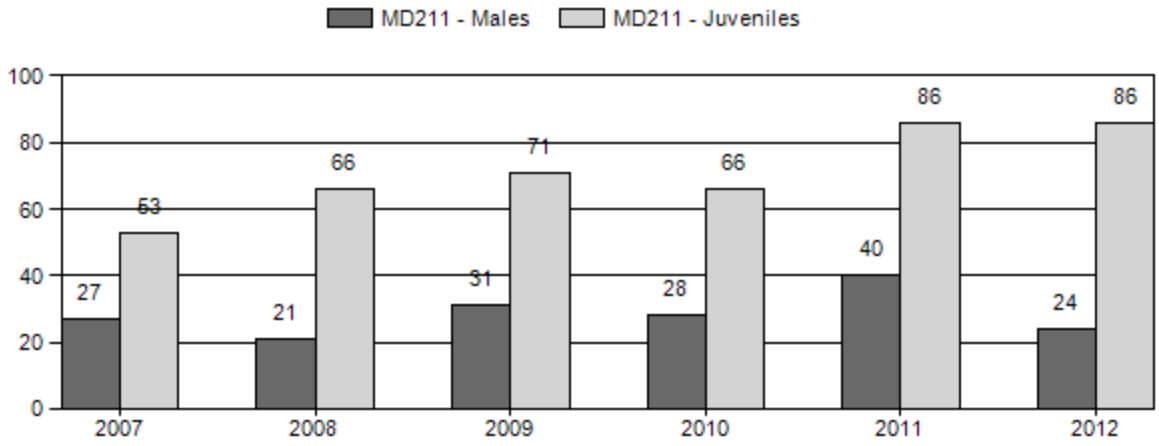
# Active Licenses




# Days per Animal Harvested




# Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD211 - SHOSHONE RIVER

| Year | Post Pop | MALES | | | | FEMALES | | JUVENILES | | Tot Cls | Cls Obj | Males to 100 Females | | | | Young to | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ylg | Adult | Total | % | Total | % | Total | % | | | Ylng | Adult | Total | Conf Int | 100 Fem | Conf Int | 100 Adult |
| 2007 | 0 | 24 | 24 | 48 | 15% | 179 | 56% | 94 | 29% | 321 | 0 | 13 | 13 | 27 | ±0 | 53 | ±0 | 41 |
| 2008 | 0 | 34 | 21 | 55 | 11% | 267 | 54% | 175 | 35% | 497 | 0 | 13 | 8 | 21 | ±0 | 66 | ±0 | 54 |
| 2009 | 0 | 38 | 33 | 71 | 15% | 231 | 50% | 163 | 35% | 465 | 0 | 16 | 14 | 31 | ±0 | 71 | ±0 | 54 |
| 2010 | 0 | 30 | 33 | 63 | 15% | 224 | 52% | 147 | 34% | 434 | 0 | 13 | 15 | 28 | ±0 | 66 | ±0 | 51 |
| 2011 | 0 | 37 | 31 | 68 | 18% | 172 | 44% | 148 | 38% | 388 | 0 | 22 | 18 | 40 | ±0 | 86 | ±0 | 62 |
| 2012 | 0 | 34 | 37 | 71 | 12% | 293 | 48% | 251 | 41% | 615 | 825 | 12 | 13 | 24 | ±0 | 86 | ±0 | 69 |

## 2012 Harvest Data

for Mule Deer Herd MD211 – SHOSHONE RIVER

| Area | Type | Active Lic/Htrs | Buck | Doe | Fawn | Total | Success | Days/ Harvest | Days | Licenses Sold |
|---|---|---|---|---|---|---|---|---|---|---|
| 122 SHOSHONE RIVER | | | | | | | | | | |
| | General | 1103 | 330 | 181 | 39 | 550 | 49.90% | 7 | 3852 | |
| | Type 6 | 271 | 0 | 167 | 19 | 186 | 68.60% | 4.9 | 913 | 400 |
| Pooled Total | | 1262 (1374)* | 330 | 348 | 58 | 736 | 58.30% (53.6%)* | 6.5 | 4765 | |
| Pooled Resident | | 1126 | 282 | 324 | 52 | 658 | 58.40% | 6.7 | 4438 | |
| Pooled Nonresident | | 136 | 48 | 24 | 6 | 78 | 57.40% | 4.2 | 327 | |
| 123 LOVELL | | | | | | | | | | |
| | General | 155 | 24 | 6 | 0 | 30 | 19.40% | 16.6 | 499 | |
| | Type 6 | 29 | 0 | 10 | 9 | 19 | 65.50% | 4 | 76 | 50 |
| Pooled Total | | 174 (184)* | 24 | 16 | 9 | 49 | 28.20% (26.6%)* | 11.7 | 575 | |
| Pooled Resident | | 131 | 10 | 11 | 5 | 26 | 19.80% | 19.1 | 497 | |
| Pooled Nonresident | | 43 | 14 | 5 | 4 | 23 | 53.50% | 3.4 | 78 | |
| 2012 Hunt Area Total | | 1436 (1558)* | 354 | 364 | 67 | 785 | 54.70% (50.4%)* | 6.8 | 5340 | 450 |
| 2012 Herd Total | | 1399 (1511)* | 354 | 364 | 67 | 785 | 56.10% (52.0%)* | 6.8 | 5340 | 450 |

*Active Licenses

## 2013 HUNTING SEASONS
## Shoshone River Mule Deer Herd Unit (MD211)

| Hunt Area | Type | Dates of Seasons | | Quota | Limitations |
|---|---|---|---|---|---|
| | | Opens | Closes | | |
| 122 | | Nov. 1 | Nov. 10 | | General license; any deer |
| | | Nov. 11 | Nov. 30 | | General license; antlerless deer |
| | 3 | Nov. 1 | Nov. 30 | 50 | Limited quota licenses; any white-tailed deer |
| | 6 | Oct. 15 | Dec. 31 | 50 | Limited quota licenses; doe or fawn |
| | 7 | Oct. 15 | Dec. 31 | 450 | Limited quota licenses; doe or fawn valid on or within one-half (½) mile of irrigated land within the Shoshone River drainage |
| | 8 | Oct. 15 | Dec. 31 | 200 | Limited quota licenses; doe or fawn white-tailed deer |
| 123 | | Oct. 15 | Oct. 31 | | General license; any deer |
| | 6 | Oct. 15 | Dec. 31 | 50 | Limited quota licenses; doe or fawn valid on private land south of the Shoshone River |
| **Archery** | | | | | |
| | | Sep. 1 | Sep. 30 | | Refer to Section 3 of this Chapter |

| Hunt Area | Type | Quota change from 2012 |
|---|---|---|
| 122 | 6 | +100 |
| | 8 | +100 |
| Total | 6 | +100 |
| | 8 | +100 |

**Management Evaluation**

**Current Management Objective:** none
**2012 Postseason Population Estimate:** none
**2013 Proposed Postseason Population Estimate:** none

**Herd Unit Issues.** Management of this herd unit using a population objective was eliminated in 2001 due to insufficient sample sizes obtained during classification surveys. Without adequate samples, sex and age ratios were unreliable and inadequate for population modeling using POP-II software. No management goals (e.g., count objectives, buck ratios) were established for this herd due to lack of data. The main management emphasis has been to keep crop depredation to a minimum and provide for recreational hunting.

Anthropomorphic factors that may be affecting this deer population include: housing development, agriculture, oil/gas development, and mining. There are few scattered oil/gas wells throughout the herd unit which probably have minimal impacts to deer or the habitat. Mining for bentonite has typically been in poor quality habitat with few/no deer. Farming has altered riparian areas on private land and actually increases amount of available forage; however, landowner tolerance is low. We have needed to manage these deer to decrease crop depredation.

**Weather.** Climate, specifically drought, has affected upland vegetation and water availability on public lands. Drought during 2000-04 resulted in mortality of some sagebrush and probably affected herbaceous vegetation. Weather during 2012 was warmer and drier than the recent 30-year averages.

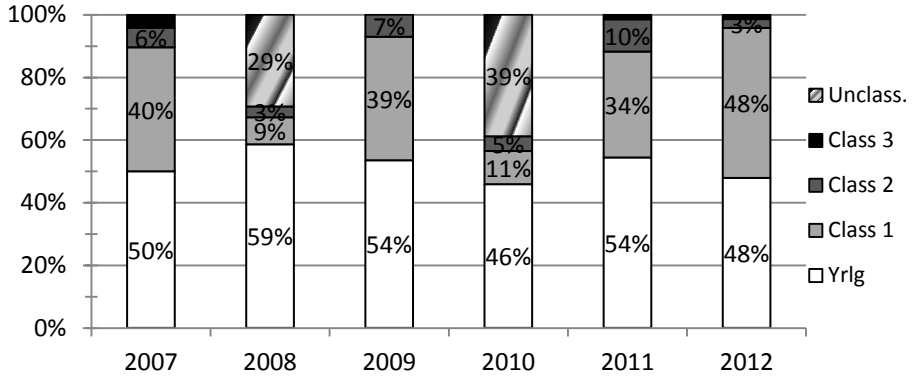
**Habitat.** Even before recent droughts, habitat quality in portions of the herd unit was poor due to naturally low precipitation and poor soil conditions. Thus, deer have moved to agricultural areas in search of better forage. There are no transects established within the herd unit to measure production and utilization of sagebrush. Cheatgrass has been able to become established and is the dominant grass species on some sites.

**Field Data.** Classification surveys have not resulted in adequate number of deer observed to result in reliable data. Attempts were made in the past to survey the herd unit with a helicopter, but few deer were found, so that technique was not continued. Since few deer have been observed, this herd unit has become a low priority for limited manpower. In 12 the past 20 years, less than 350 deer were observed. Since 2007, more (>400) have been surveyed, including over 600 in 2012. No deer were classified in Area 123 in 2012. Hunting seasons for deer and pheasant have extended into late November and December, thus deer remain nocturnal during the regular post-season survey period.

Unsworth et al. (1999) suggested that a winter fawn:doe ratio above 66:100 would result in an increasing population. Over the past five years, fawn:doe ratios have ranged between 66-86:100 (average=75).

Of the 615 deer classified in Area 122, only 71 (12%) were bucks. Yearling bucks comprised about half the total bucks observed (12:100 does); typical in most years. Few adult bucks larger than 20 inch antler spread were observed (~4%; Fig. 1). Buck ratios were highly variable over the past five years due to small samples of deer observed (range=21 to 40 bucks:100 does).

Figure 1. Antler size class of bucks observed during post-season classification surveys of the Shoshone River mule deer herd, 2007-2012.



**Harvest Data.** Harvest statistics are probably the best data we have for this herd unit; however, no clear trends can be discerned to suggest trends in the population. Overall success has been steadily increasing since 2005 (with the exception of 2012) and days per harvested animal have been steadily decreasing (with the exception of 2011), suggesting that hunters are having an easier time finding a deer to harvest. During 2005-12, the number of doe/fawn licenses offered has increased, so trends in those statistics do not reflect number of bucks in the population and may not reflect trends in the population. When statistics from only general licenses was analyzed, data still do not show a clear trend. The number of hunters and recreation days has been increasing the past six years (exception of 2012) but days per harvest have remained essentially unchanged (average=7 days). Overall, general license hunter success has been trending upward. Success of general license hunters at harvesting a buck was increasing (1999-2008), but has declined since (approximately 30% in 2009-12). Number of bucks harvested was increasing between 1998 to 2008 and has since declined slightly (406 in 2008 to 321 in 2012).

**Population.** No POP-II model has been used for the Shoshone deer herd since 2001. Attempts to estimate this population with spreadsheet models may incur similar pitfalls as POP-II models (i.e., poor data in, poor results out). The constant juvenile, constant adult (CJ,CA) survival and semi-constant juvenile, semi-constant adult (SCJ,SCA) survival models both suggest the population has been increasing since 1995, to a population of over 8,000 deer in 2012. Both have AIC values below 100. Those population estimates, however, are unrealistic. The time-specific juvenile, constant adult (TSJ,CA) survival model estimate the population was fairly stable until 2005 (end of drought), increased to about 5,000 deer in 2009, then declined to just below 4,000 deer by post-season 2012. Estimated and observed buck:doe ratios lined up accurately. Those trends are believable, but AIC value for the model was 969.

High fawn:doe ratios suggest this population should be increasing. Landowners feel there are too many deer in crops. Hunters, however, feel there are fewer deer in the herd than previous years and have urged for more conservative hunting seasons.

**Management Summary.** Regardless of the population level, we need to address deer depredation on crops. The hunting seasons proposed for 2013 will probably further decrease the population. Levels of crop depredation have been unacceptable to landowners and the level of reimbursement for that damage has been unacceptable to WGFD personnel. However, hunters have urged more conservative hunting seasons (e.g., fewer doe/fawn licenses) to increase the population and quality and quantity of bucks. Hunter satisfaction has been over 66% (dissatisfied=~17%). If/when upland habitat recovers from drought and deer no longer use cropland, we may be able to increase the population.

**Literature Cited**

Unsworth, J.W., D.F. Pac, G. C. White, and R.M. Bartman. 1999. Mule deer survival in Colorado, Idaho, and Montana. Journal of Wildlife Management 36:315-326.

# 2012 - JCR Evaluation Form

SPECIES: Mule Deer
PERIOD: 6/1/2012 - 5/31/2013

HERD: MD212 - OWL CREEK/MEETEETSE

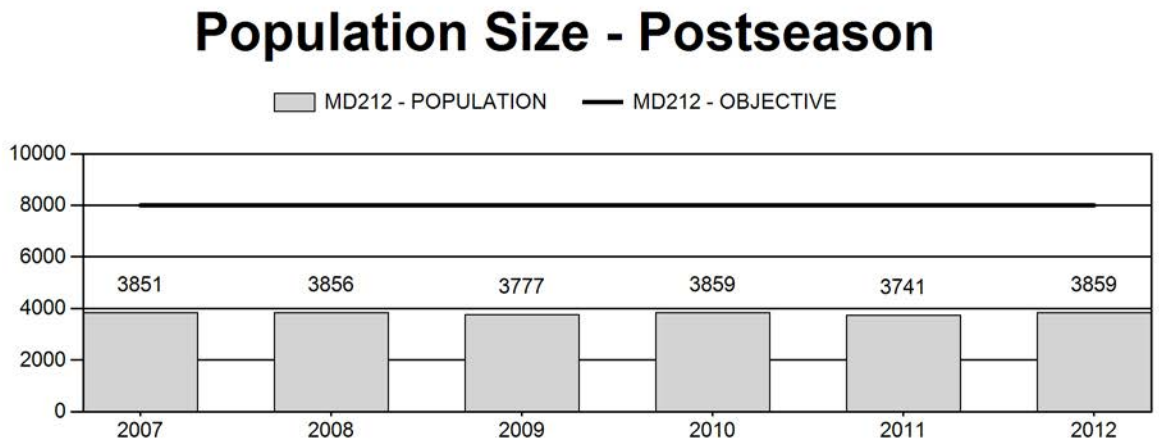
HUNT AREAS: 116-120
PREPARED BY: BART KROGER

| | 2007 - 2011 Average | 2012 | 2013 Proposed |
|---|---|---|---|
| Population: | 3,817 | 3,859 | 4,019 |
| Harvest: | 384 | 235 | 235 |
| Hunters: | 480 | 322 | 310 |
| Hunter Success: | 80% | 73% | 76% |
| Active Licenses: | 562 | 352 | 340 |
| Active License Percent: | 68% | 67% | 69% |
| Recreation Days: | 2,161 | 1,426 | 1,375 |
| Days Per Animal: | 5.6 | 6.1 | 5.9 |
| Males per 100 Females | 36 | 40 | |
| Juveniles per 100 Females | 62 | 59 | |

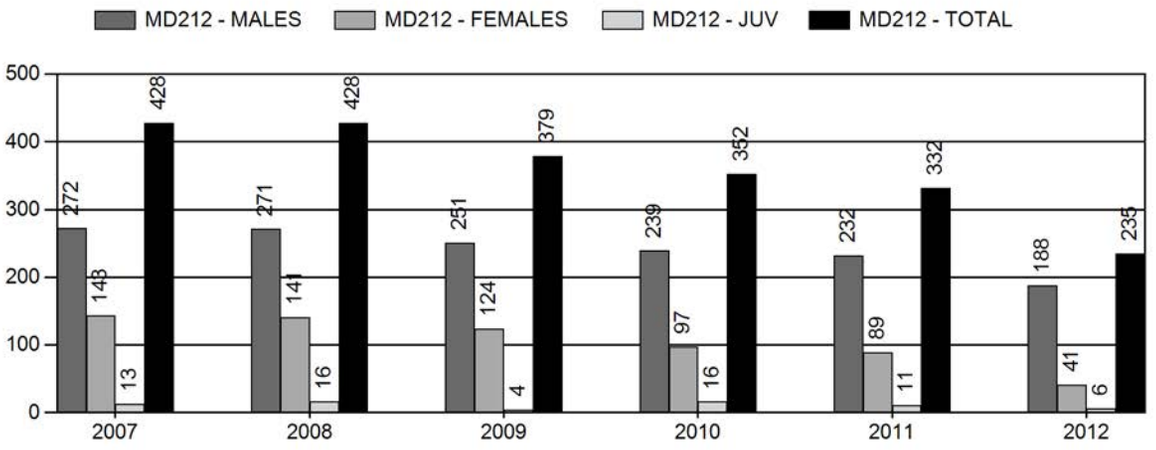
| | |
|---|---|
| Population Objective: | 8,000 |
| Management Strategy: | Special |
| Percent population is above (+) or below (-) objective: | -51.8% |
| Number of years population has been + or - objective in recent trend: | 20 |
| Model Date: | 4/11/2013 |

**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

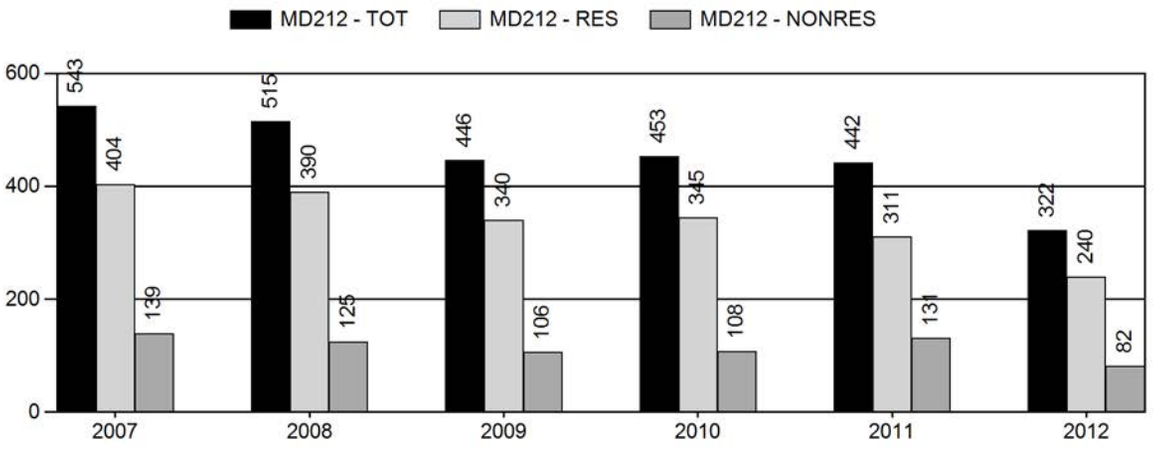
| | JCR Year | Proposed |
|---|---|---|
| Females ≥ 1 year old: | 2% | 3% |
| Males ≥ 1 year old: | 21% | 18% |
| Juveniles (< 1 year old): | .2% | .2% |
| Total: | 6% | 6% |
| Proposed change in post-season population: | 0% | +4% |



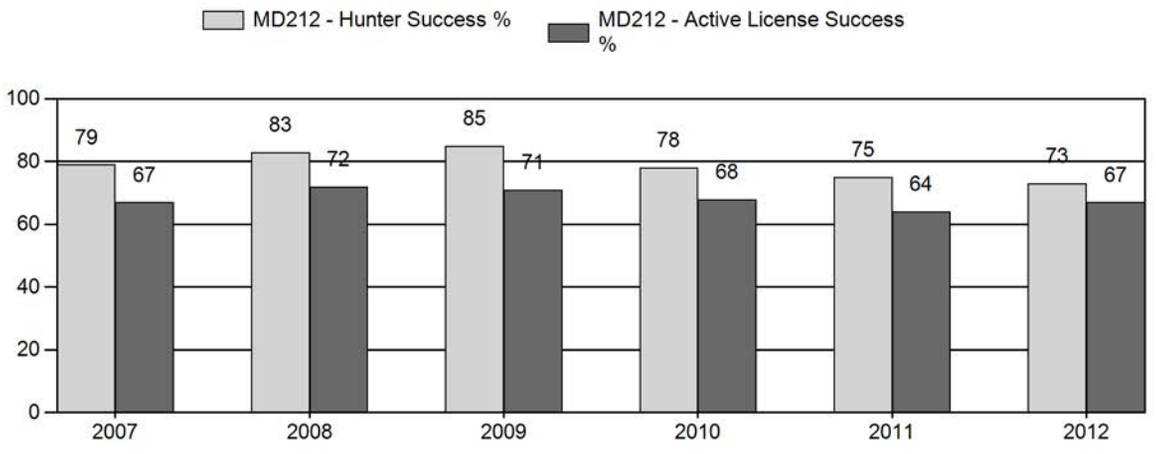
# Harvest



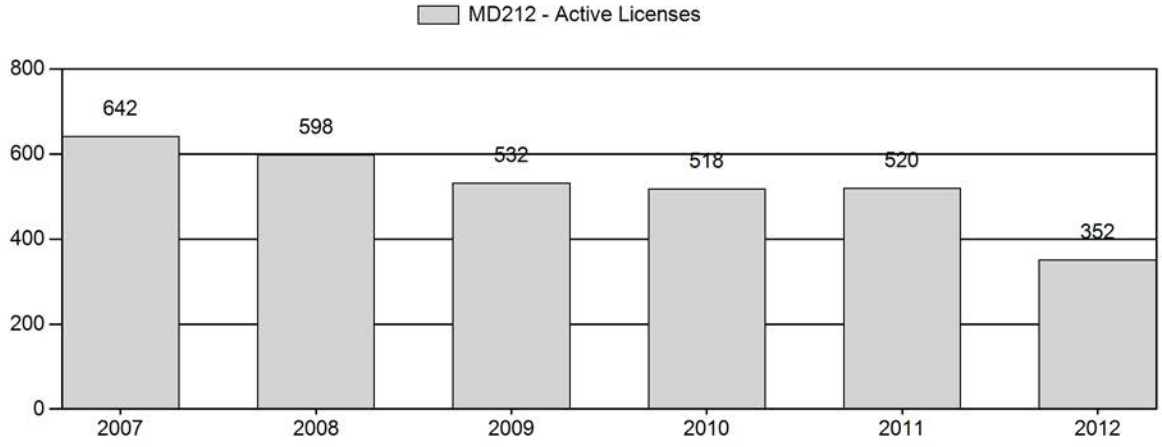

# Number of Hunters



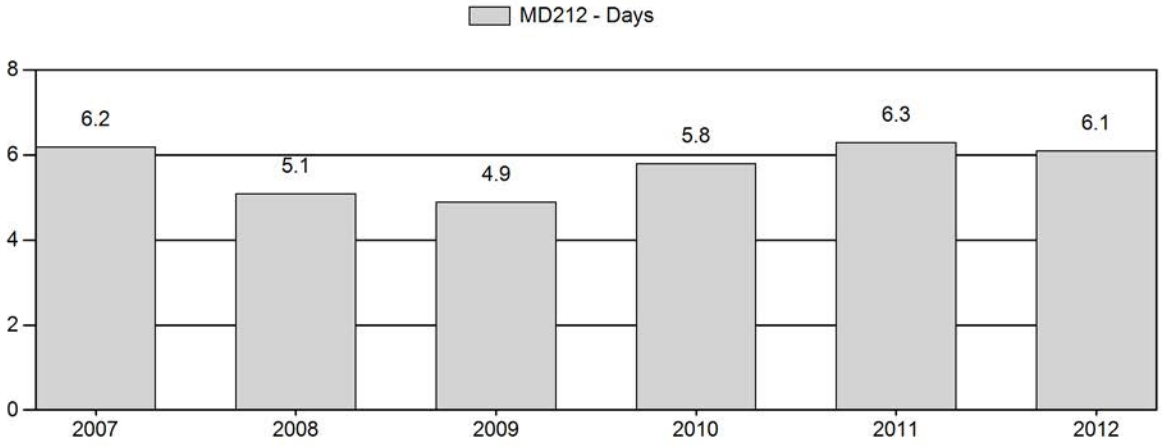

# Harvest Success



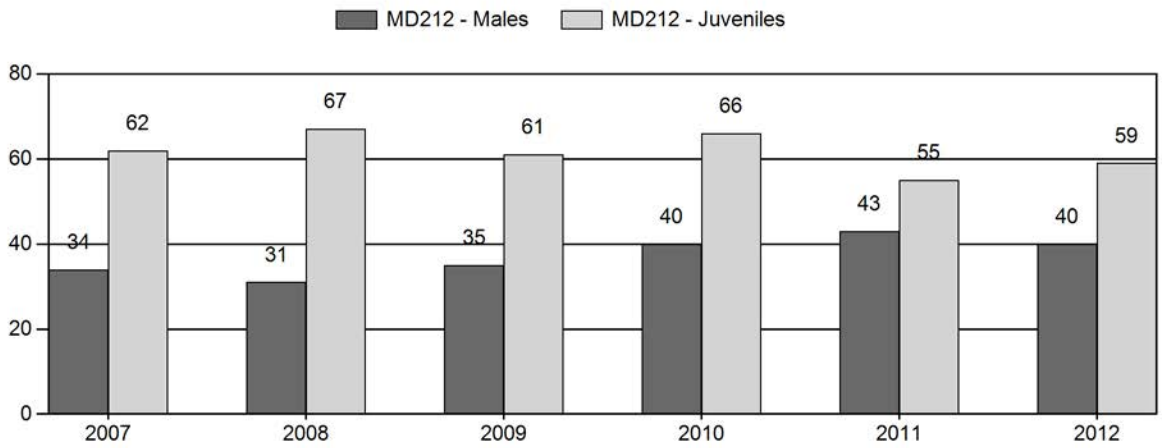
# Active Licenses




# Days per Animal Harvested




# Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD212 - OWL CREEK/MEETEETSE

| | | MALES | | | | FEMALES | | JUVENILES | | | | Males to 100 Females | | | | Young to | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Post Pop | Ylg | Adult | Total | % | Total | % | Total | % | Tot Cls | Cls Obj | Yling | Adult | Total | Conf Int | 100 Fem | Conf Int | 100 Adult |
| 2007 | 3,851 | 93 | 149 | 242 | 17% | 721 | 51% | 444 | 32% | 1,407 | 998 | 13 | 21 | 34 | ± 3 | 62 | ± 4 | 46 |
| 2008 | 3,856 | 69 | 151 | 220 | 16% | 704 | 51% | 470 | 34% | 1,394 | 1,077 | 10 | 21 | 31 | ± 2 | 67 | ± 4 | 51 |
| 2009 | 3,777 | 80 | 157 | 237 | 18% | 681 | 51% | 417 | 31% | 1,335 | 957 | 12 | 23 | 35 | ± 3 | 61 | ± 4 | 45 |
| 2010 | 3,859 | 78 | 134 | 212 | 19% | 532 | 49% | 352 | 32% | 1,096 | 1,080 | 15 | 25 | 40 | ± 4 | 66 | ± 5 | 47 |
| 2011 | 3,741 | 56 | 175 | 231 | 22% | 541 | 50% | 300 | 28% | 1,072 | 901 | 10 | 32 | 43 | ± 4 | 55 | ± 4 | 39 |
| 2012 | 3,859 | 34 | 130 | 164 | 20% | 406 | 50% | 241 | 30% | 811 | 910 | 8 | 32 | 40 | ± 4 | 59 | ± 5 | 42 |

## 2013 HUNTING SEASONS
## OWL CREEK/MEETEETSE MULE DEER HERD (MD212)

| Hunt Area | Type | Dates of Seasons Opens | Closes | Quota | Limitations |
|---|---|---|---|---|---|
| 116 | 1 | Oct. 15 | Oct. 31 | 75 | Limited quota; any deer |
| 116, 117, 118 | 3 | Nov. 1 | Nov. 30 | 100 | Limited quota; any white-tailed deer |
| | 8 | Oct. 15 | Nov. 30 | 100 | Limited quota; doe or fawn white-tailed deer |
| 117 | 1 | Sep. 15 | Oct. 15 | 50 | Limited quota; antlered mule deer or any white-tailed deer |
| 118 | 1 | Oct. 15 | Oct. 31 | 40 | Limited quota; any deer |
| 119 | 1 | Nov. 1 | Nov. 15 | 100 | Limited quota; any deer |
| | 6 | Sep. 15 | Nov. 15 | 25 | Limited quota; doe or fawn valid on irrigated private land |
| 119, 120 | 3 | Oct. 1 | Nov. 30 | 60 | Limited quota; any white-tailed deer |
| | 8 | Sep. 15 | Dec. 15 | 350 | Limited quota; doe or fawn white-tailed deer |
| 120 | 1 | Nov. 1 | Nov. 15 | 75 | Limited quota; any deer |
| | 6 | Sep. 15 | Nov. 15 | 50 | Limited quota; doe or fawn valid on private land |
| Archery: 116, 117, 118, 119 | | Sep. 1 | Sep. 30 | | Refer to Section 3 |
| 120 | | Aug. 15 | Sep. 30 | | Refer to Section 3 |

| Hunt Area | Type | Quota change from 2012 |
|---|---|---|
| 118, 119 | 6 | -25 |
| 119 | 6 | +25 |
| 120 | 1 | -25 |
| **HU Total** | **1** | **-25** |

**Management Evaluation**

**Current Postseason Population Management Objective:** 8,000

**Management Strategy:** Special
**2012 Postseason Population Estimate:** 3,900
**2013 Proposed Postseason Population Estimate:** 4,000

**Herd Unit Issues.** Currently, the over-riding management goals of this deer herd is to provide quality buck hunting, allow mule deer populations to increase on public lands, and to address potential damage issues on private lands. The 2012 post-season population estimate is 51% below objective. Field personnel, landowners and most hunters agree this herd is below desired numbers, but most also agree a population objective of 8,000 deer is too high. A herd objection of around 6,000 deer would likely be desirable for most hunters, while at the same time not put excessive use on the habitat or promote damage issues on private lands. Model trends currently indicate a mostly stable population for the past 20 years. However, field personnel and most landowners, along with classification sample sizes and harvest statistics indicate a decline in the population in recent years. Poor habitat conditions, long-term drought, and increased harvest of deer on private lands due to potential damage have kept this population from increasing toward objective.

**Weather.** The winters of 2011-12 and 2012-13 were mild with low snowpack resulting in mostly good over-winter survival. However, the winter of 2010-11 along with the dry spring and summer of 2012 appeared to have been severe enough to cause some die-off and reduced survival. Both herbaceous vegetation and shrub growth has been minimal the past three years, except in 2011, when spring precipitation was well above normal. Drought conditions have also affected available water in many stock reservoirs and perennial streams.

**Habitat.** Numerous prescribed and wild fires have burned through this herd unit, particularly on winter ranges in area 118 and 119. Locally for this herd unit, long-term drought conditions have contributed to fewer deer occurring on native range, and have forced more deer onto private irrigated crop fields. Two sagebrush transects were established in this herd unit in 2004 (Appendix C). Transect locations include Grass Creek and Wagonhound Bench. Sagebrush leader growth in 2012 for both the Grass Creek and Wagonhound transects was 2.0cm. This growth is down about 50% compared 2011, and down about 25% compared to the long-term average. Winter utilization is usually around 15%, but is shared with wintering pronghorn.

**Field Data.** Both aerial and ground classifications surveys are used in obtaining post-season buck and fawn ratios for this deer herd. Adequate sample sizes are typically achieved in most years. Routine classification routes for each hunt area have been maintained in order to reflect general trends in deer numbers over time. The number of deer classified has declined dramatically in recent years. In 2007, 1,400 deer where classified, while in 2012 only 811 were classified; a decline of 42%. For the most part, buck and fawn ratios have remained favorable in recent years, with a 3-year average of 34 bucks and 56 fawns per 100 does.

**Harvest Data.** Recent harvest statistics indicate hunting has gotten a little more difficult in this herd unit. Hunter numbers and harvest declined the past five years by about 40-45%, while harvest success has dropped by 20%, and hunter effort has increased by 1.2 days. The drop in hunter numbers and harvest is mostly due to Type 6 and 7 licenses quotas being reduced because of declining deer numbers and reduced damage issues. Type 1 hunter success continues to

remain favorable at around 50-75%. Concerns over the declines in deer numbers are annually heard from hunters and landowners. In fact, the Pitchfork Ranch (HMA) has shut down mule deer hunting the past 4 years in hunt area 116 because of declines in deer. Whereas, the LU Ranch (Absaroka Front HMA) annually express concerns over declining deer numbers in hunt area 118.

**Population.** The constant juvenile & constant adult survival (CJ, CA) spreadsheet model was chosen to represent this herd. This model supported the lowest AIC value (26), along with a very good fit (17) of the model vs. field male ratios. Although the population estimate seems reasonable, the recent trend contradicts field personnel perceptions, harvest and classification sample sizes, which indicate a declining population since about 2007. Because of this, we think the model is only a fair representation of the herd.

All hunt areas (116-120) in the herd unit support limited quota hunting seasons. Type 1 license quotas are typically kept low to allow for higher buck ratios and quality. Overwhelming public support for this type of management is heard annually at public season meetings, and the reason this deer herd went to special management in 2007. Doe/fawn licenses have and will continue to be used for damage issues. Season structures have been designed, and will likely continue to be designed to help increase this deer population, particularly those deer utilizing native ranges.

**Management Summary.** The Type 1 quota in hunt area 120 will be reduced by 25 licenses. Current harvest statistics and buck ratios do not support this reduction in licenses, but a drop in the overall number of deer in area 120 warrants this decrease. The number of deer classified in this area has dropped by 71% over the past 7 years. License quotas in areas 116, 117, 118 and 119 appear adequate, with most of these areas having license reductions in recent years. A Type 6 license will be added to area 119 to address damage issues with 25 licenses. The projected 2013 harvest is roughly 235 deer, similar to 2012. This predicted harvest represents 6% of the estimated 2013 pre-season population. Hopefully this deer herd will start to show improving trends, but it's likely to continue declining into the future because of poor habitat and drought conditions.

| INPUT | |
|---|---|
| Species: | Mule Deer |
| Biologist: | Bart Kroger |
| Herd Unit & No.: | Owl Cr/Meeteetse, MD212 |
| Model date: | 04/11/13 |

☐ Clear form

| MODELS SUMMARY | | Fit | Relative AICc | Check best model to create report | Notes |
|---|---|---|---|---|---|
| CJ,CA | Constant Juvenile & Adult Survival | 17 | 26 | ☑ CJ,CA Model | |
| SCJ,SCA | Semi-Constant Juvenile & Semi-Constant Adult Survival | 17 | 26 | ☐ SCJ,SCA M | |
| TSJ,CA | Time-Specific Juvenile & Constant Adult Survival | 0 | 115 | ☐ TSJ,CA Model | |

**Population Estimates from Top Model**

| Year | Posthunt Population Est. | | Trend Count | Predicted Prehunt Population | | | | Predicted Posthunt Population | | | | Objective |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Field Est | Field SE | | Juveniles | Total Males | Females | Total | Juveniles | Total Males | Females | Total | |
| 1993 | | | | 1151 | 1415 | 2903 | 5469 | 1129 | 884 | 2556 | 4569 | 8000 |
| 1994 | | | | 1252 | 1121 | 2538 | 4910 | 1233 | 676 | 2417 | 4326 | 8000 |
| 1995 | | | | 991 | 978 | 2454 | 4424 | 976 | 599 | 2323 | 3898 | 8000 |
| 1996 | | | | 1454 | 828 | 2290 | 4572 | 1446 | 568 | 2215 | 4229 | 8000 |
| 1997 | | | | 1255 | 957 | 2353 | 4564 | 1255 | 622 | 2265 | 4142 | 8000 |
| 1998 | | | | 1562 | 940 | 2332 | 4834 | 1555 | 648 | 2243 | 4446 | 8000 |
| 1999 | | | | 1607 | 1060 | 2413 | 5079 | 1599 | 677 | 2308 | 4584 | 8000 |
| 2000 | | | | 1384 | 1099 | 2482 | 4965 | 1376 | 768 | 2395 | 4539 | 8000 |
| 2001 | | | | 1164 | 1103 | 2482 | 4749 | 1154 | 781 | 2363 | 4297 | 8000 |
| 2002 | | | | 1356 | 1041 | 2382 | 4778 | 1346 | 661 | 2201 | 4207 | 8000 |
| 2003 | | | | 1416 | 1002 | 2308 | 4726 | 1400 | 645 | 2139 | 4184 | 8000 |
| 2004 | | | | 1374 | 1006 | 2274 | 4654 | 1366 | 661 | 2120 | 4147 | 8000 |
| 2005 | | | | 1320 | 1009 | 2246 | 4575 | 1310 | 682 | 2084 | 4076 | 8000 |
| 2006 | | | | 1273 | 1009 | 2197 | 4479 | 1266 | 659 | 2014 | 3939 | 8000 |
| 2007 | | | | 1225 | 974 | 2123 | 4322 | 1211 | 675 | 1966 | 3851 | 8000 |
| 2008 | | | | 1292 | 970 | 2064 | 4326 | 1275 | 672 | 1909 | 3856 | 8000 |
| 2009 | | | | 1168 | 988 | 2037 | 4194 | 1164 | 712 | 1901 | 3777 | 8000 |
| 2010 | | | | 1266 | 986 | 1994 | 4246 | 1249 | 723 | 1887 | 3859 | 8000 |
| 2011 | | | | 1073 | 1023 | 2010 | 4106 | 1060 | 768 | 1912 | 3741 | 8000 |
| 2012 | | | | 1149 | 999 | 1970 | 4118 | 1142 | 792 | 1925 | 3859 | 8000 |
| 2013 | | | | 1224 | 1047 | 2007 | 4278 | 1213 | 854 | 1952 | 4019 | 8000 |
| 2014 | | | | | | | | | | | | 8000 |
| 2015 | | | | | | | | | | | | 8000 |
| 2016 | | | | | | | | | | | | 8000 |
| 2017 | | | | | | | | | | | | 8000 |
| 2018 | | | | | | | | | | | | 8000 |
| 2019 | | | | | | | | | | | | 8000 |
| 2020 | | | | | | | | | | | | 8000 |
| 2021 | | | | | | | | | | | | 8000 |
| 2022 | | | | | | | | | | | | 8000 |
| 2023 | | | | | | | | | | | | 8000 |
| 2024 | | | | | | | | | | | | 8000 |
| 2025 | | | | | | | | | | | | 8000 |

## Survival and Initial Population Estimates

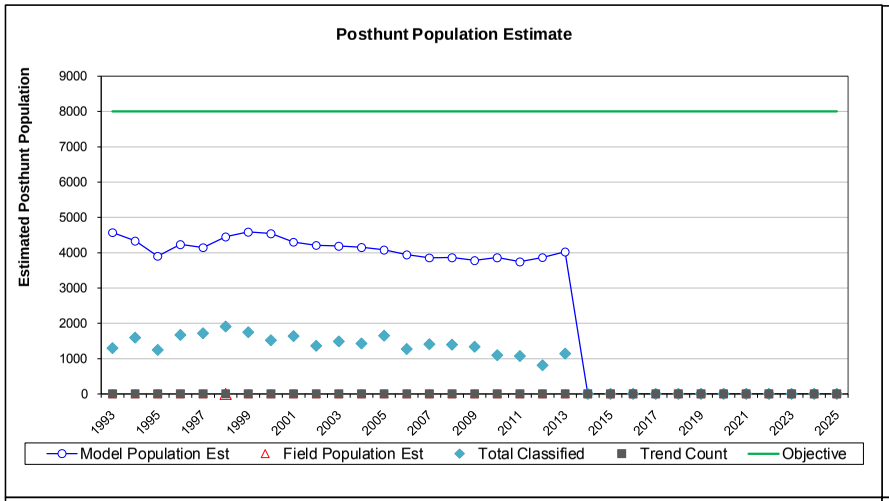
| Year | Annual Juvenile Survival Rates | | | Annual Adult Survival Rates | | |
|---|---|---|---|---|---|---|
| | Model Est | Field Est | SE | Model Est | Field Est | SE |
| 1993 | 0.66 | | | 0.85 | | |
| 1994 | 0.66 | | | 0.85 | | |
| 1995 | 0.66 | | | 0.85 | | |
| 1996 | 0.66 | | | 0.85 | | |
| 1997 | 0.66 | | | 0.85 | | |
| 1998 | 0.66 | | | 0.85 | | |
| 1999 | 0.66 | | | 0.85 | | |
| 2000 | 0.66 | | | 0.85 | | |
| 2001 | 0.66 | | | 0.85 | | |
| 2002 | 0.66 | | | 0.85 | | |
| 2003 | 0.66 | | | 0.85 | | |
| 2004 | 0.66 | | | 0.85 | | |
| 2005 | 0.66 | | | 0.85 | | |
| 2006 | 0.66 | | | 0.85 | | |
| 2007 | 0.66 | | | 0.85 | | |
| 2008 | 0.66 | | | 0.85 | | |
| 2009 | 0.66 | | | 0.85 | | |
| 2010 | 0.66 | | | 0.85 | | |
| 2011 | 0.66 | | | 0.85 | | |
| 2012 | 0.66 | | | 0.85 | | |
| 2013 | 0.66 | | | 0.85 | | |
| 2014 | | | | | | |
| 2015 | | | | | | |
| 2016 | | | | | | |
| 2017 | | | | | | |
| 2018 | | | | | | |
| 2019 | | | | | | |
| 2020 | | | | | | |
| 2021 | | | | | | |
| 2022 | | | | | | |
| 2023 | | | | | | |
| 2024 | | | | | | |
| 2025 | | | | | | |

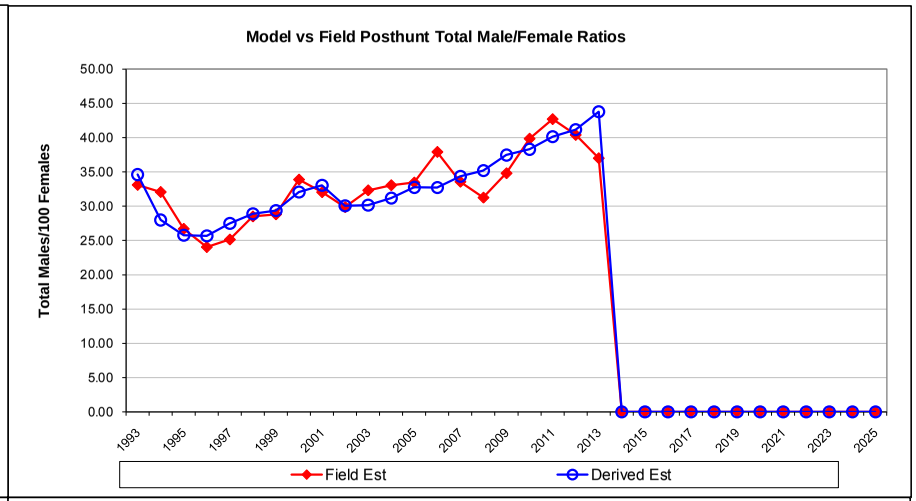
| Parameters: | Optim cells |
|---|---|
| Juvenile Survival = | 0.657 |
| Adult Survival = | 0.848 |
| Initial Total Male Pop/10,000 = | 0.088 |
| Initial Female Pop/10,000 = | 0.256 |

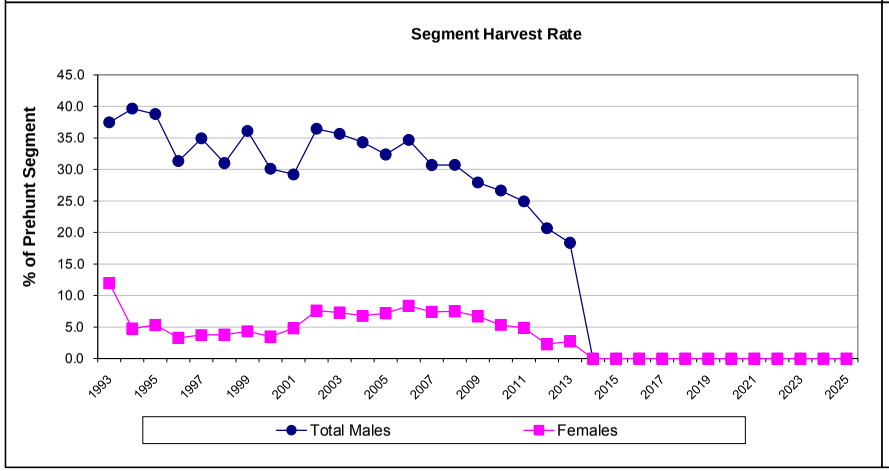
| MODEL ASSUMPTIONS | |
|---|---|
| Sex Ratio (% Males) = | 50% |
| Wounding Loss (total males) = | 10% |
| Wounding Loss (females) = | 10% |
| Wounding Loss (juveniles) = | 10% |

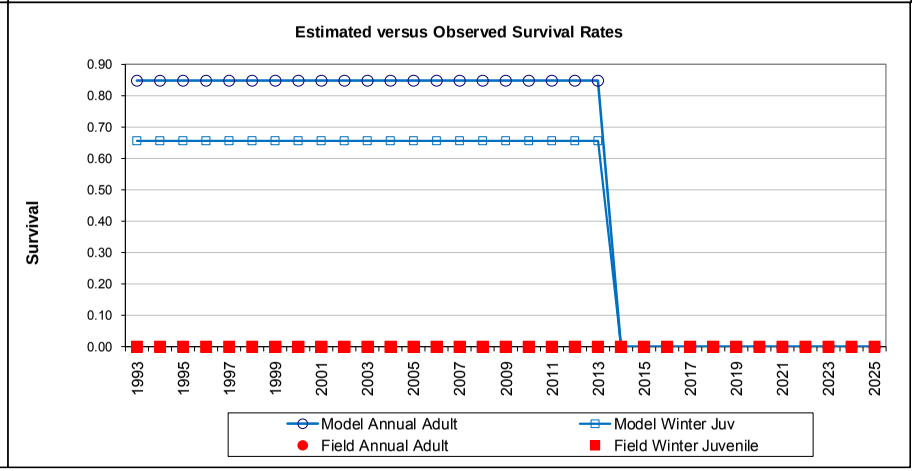
| Year | Classification Counts: Juvenile/Female Ratio | | | Classification Counts: Total Male/Female Ratio | | | Harvest | | | | Harvest: Segment Harvest Rate (% of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Derived Est | Field Est | Field SE | Derived Est | Field Est w/o bull adj | Field SE | Juv | Males | Females | Total Harvest | Total Males | Females |
| 1993 | | 44.19 | 2.95 | 34.60 | 33.11 | 2.46 | 20 | 482 | 316 | 818 | 37.5 | 12.0 |
| 1994 | | 51.03 | 2.98 | 27.98 | 32.07 | 2.21 | 17 | 404 | 110 | 531 | 39.7 | 4.8 |
| 1995 | | 42.01 | 2.84 | 25.77 | 26.69 | 2.14 | 14 | 345 | 119 | 478 | 38.8 | 5.3 |
| 1996 | | 65.31 | 3.50 | 25.67 | 24.04 | 1.84 | 7 | 236 | 69 | 312 | 31.4 | 3.3 |
| 1997 | | 55.42 | 3.01 | 27.48 | 25.13 | 1.82 | 0 | 304 | 80 | 384 | 35.0 | 3.7 |
| 1998 | | 69.33 | 3.49 | 28.90 | 28.50 | 1.95 | 6 | 265 | 81 | 352 | 31.0 | 3.8 |
| 1999 | | 69.27 | 3.65 | 29.35 | 28.80 | 2.05 | 7 | 348 | 95 | 450 | 36.1 | 4.3 |
| 2000 | | 57.43 | 3.37 | 32.07 | 33.88 | 2.39 | 8 | 301 | 79 | 388 | 30.1 | 3.5 |
| 2001 | | 48.84 | 2.83 | 33.04 | 32.04 | 2.16 | 9 | 293 | 109 | 411 | 29.2 | 4.8 |
| 2002 | | 61.15 | 3.72 | 30.04 | 29.87 | 2.33 | 9 | 345 | 165 | 519 | 36.5 | 7.6 |
| 2003 | | 65.43 | 3.79 | 30.14 | 32.31 | 2.38 | 15 | 325 | 153 | 493 | 35.7 | 7.3 |
| 2004 | | 64.45 | 3.83 | 31.18 | 33.06 | 2.47 | 7 | 314 | 140 | 461 | 34.3 | 6.8 |
| 2005 | | 62.86 | 3.49 | 32.73 | 33.45 | 2.31 | 9 | 297 | 147 | 453 | 32.4 | 7.2 |
| 2006 | | 62.88 | 4.02 | 32.71 | 37.91 | 2.87 | 6 | 318 | 167 | 491 | 34.7 | 8.4 |
| 2007 | | 61.58 | 3.71 | 34.34 | 33.56 | 2.49 | 13 | 272 | 143 | 428 | 30.7 | 7.4 |
| 2008 | | 66.76 | 3.98 | 35.18 | 31.25 | 2.41 | 16 | 271 | 141 | 428 | 30.7 | 7.5 |
| 2009 | | 61.23 | 3.81 | 37.45 | 34.80 | 2.62 | 4 | 251 | 124 | 379 | 27.9 | 6.7 |
| 2010 | | 66.17 | 4.55 | 38.30 | 39.85 | 3.24 | 16 | 239 | 97 | 352 | 26.7 | 5.4 |
| 2011 | | 55.45 | 3.99 | 40.14 | 42.70 | 3.36 | 11 | 232 | 89 | 332 | 24.9 | 4.9 |
| 2012 | | 59.36 | 4.83 | 41.16 | 40.39 | 3.74 | 6 | 188 | 41 | 235 | 20.7 | 2.3 |
| 2013 | | 62.13 | 4.19 | 43.77 | 37.00 | 2.97 | 10 | 175 | 50 | 235 | 18.4 | 2.7 |
| 2014 | | | | | | | | | | | | |
| 2015 | | | | | | | | | | | | |
| 2016 | | | | | | | | | | | | |
| 2017 | | | | | | | | | | | | |
| 2018 | | | | | | | | | | | | |
| 2019 | | | | | | | | | | | | |
| 2020 | | | | | | | | | | | | |
| 2021 | | | | | | | | | | | | |
| 2022 | | | | | | | | | | | | |
| 2023 | | | | | | | | | | | | |
| 2024 | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | |

## FIGURES



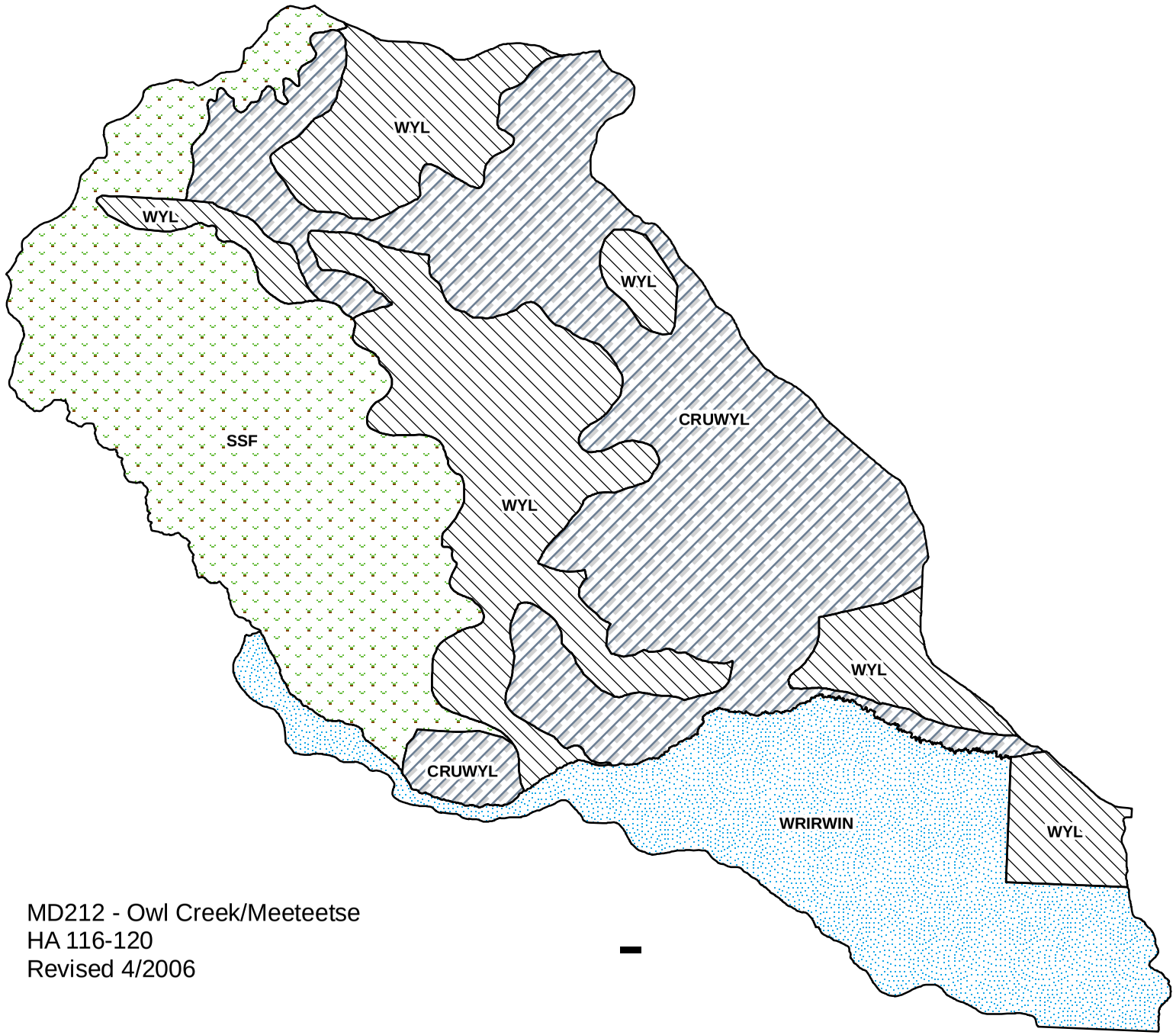




**Comments:**

## END




MD212 - Owl Creek/Meeteetse
HA 116-120
Revised 4/2006

# 2012 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2012 - 5/31/2013

HERD: MD215 - UPPER SHOSHONE

HUNT AREAS: 110-115

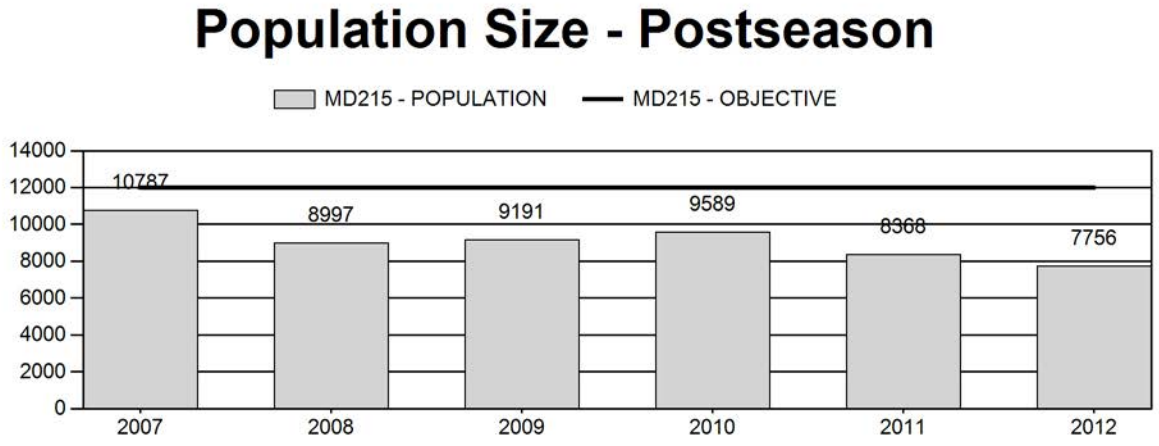
PREPARED BY: DOUG MCWHIRTER

| | 2007 - 2011 Average | 2012 | 2013 Proposed |
|---|---|---|---|
| Population: | 9,386 | 7,756 | 8,300 |
| Harvest: | 1,157 | 867 | 815 |
| Hunters: | 1,942 | 1,513 | 1,450 |
| Hunter Success: | 60% | 57% | 56% |
| Active Licenses: | 2,133 | 1,580 | 1,500 |
| Active License Percent: | 54% | 55% | 54% |
| Recreation Days: | 10,353 | 6,967 | 6,800 |
| Days Per Animal: | 8.9 | 8.0 | 8.3 |
| Males per 100 Females | 29 | 19 | |
| Juveniles per 100 Females | 58 | 74 | |

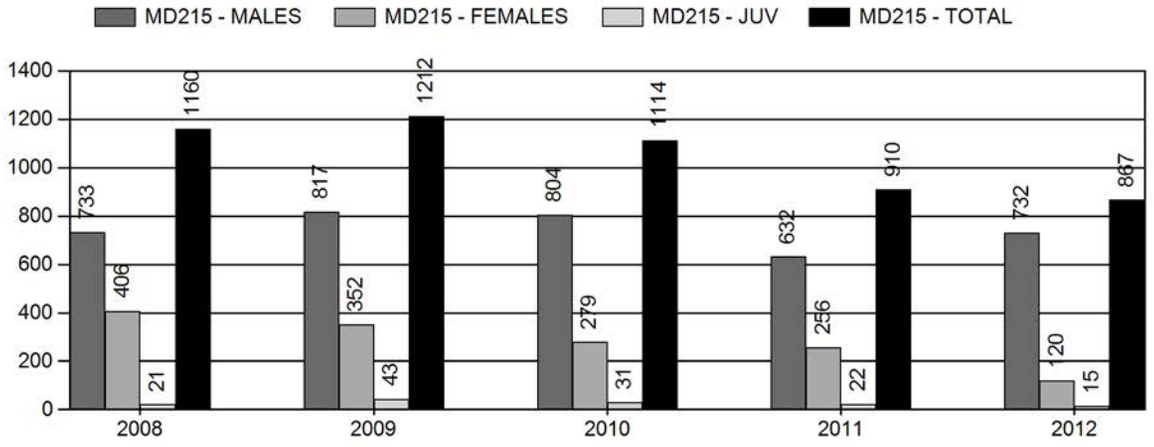
| | |
|---|---|
| Population Objective: | 12,000 |
| Management Strategy: | Recreational |
| Percent population is above (+) or below (-) objective: | -35.4% |
| Number of years population has been + or - objective in recent trend: | 6 |
| Model Date: | 2/26/2013 |

**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

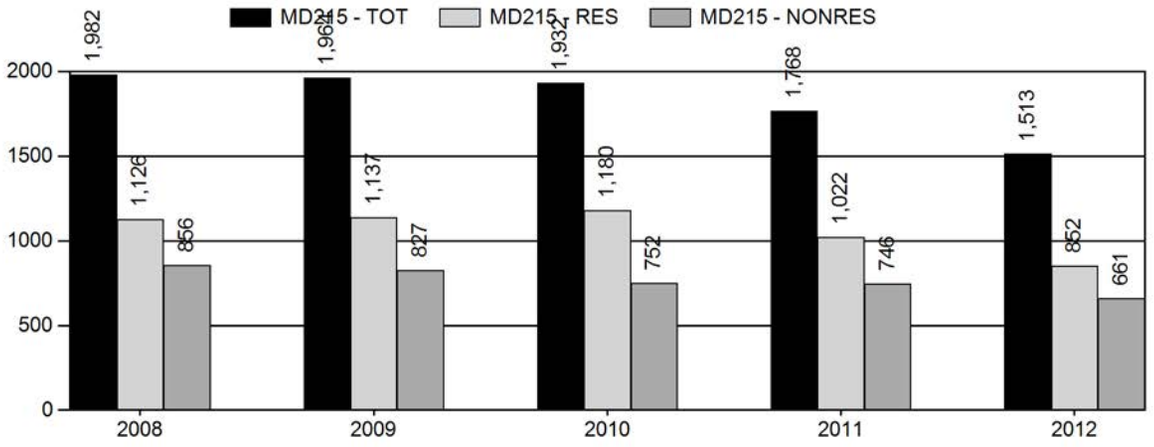
| | JCR Year | Proposed |
|---|---|---|
| Females ≥ 1 year old: | 2.8% | 2.4% |
| Males ≥ 1 year old: | 28.9% | 39.3% |
| Juveniles (< 1 year old): | 0.7% | 1.0% |
| Total: | 8.34% | 8.9% |
| Proposed change in post-season population: | -.08% | 7.14% |



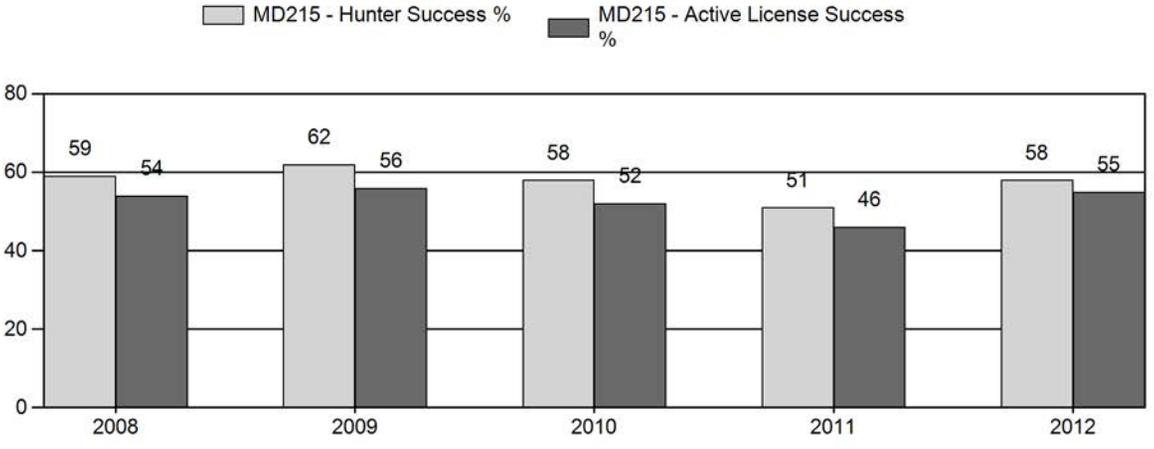
# Harvest



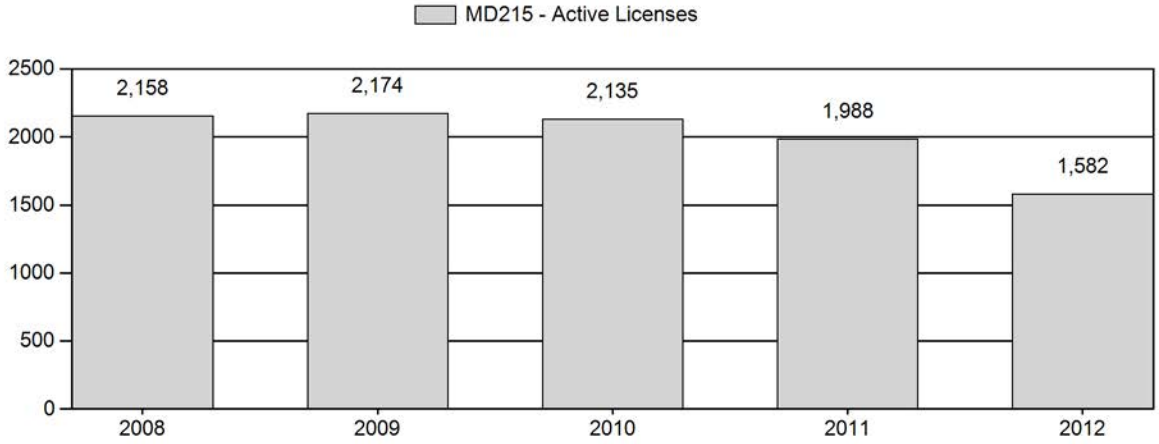

# Number of Hunters



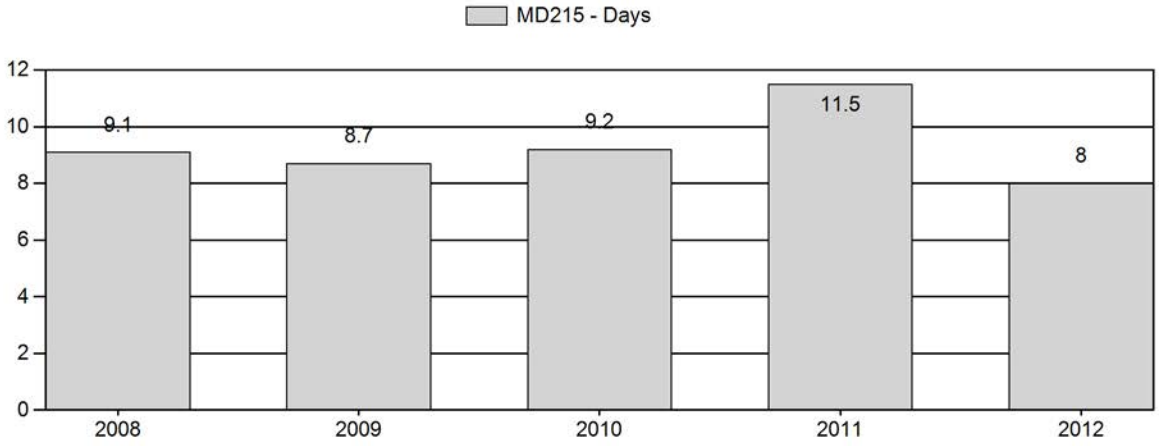

# Harvest Success



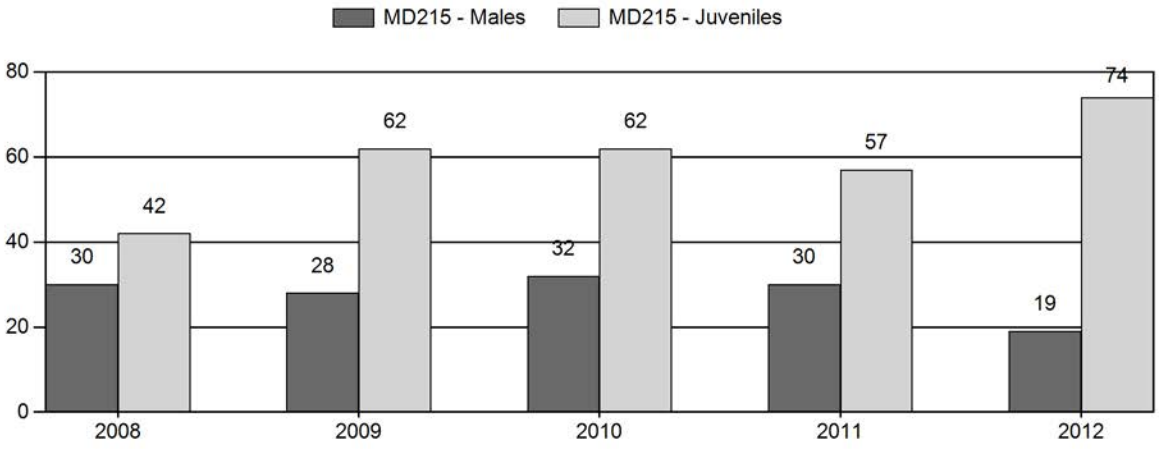
# Active Licenses




# Days per Animal Harvested




# Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

### for Mule Deer Herd MD215 - UPPER SHOSHONE

| | | MALES | | | | FEMALES | | JUVENILES | | | | Males to 100 Females | | | | Young to | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Post Pop | Ylg | Adult | Total | % | Total | % | Total | % | Tot Cls | Cls Obj | Ylng | Adult | Total | Conf Int | 100 Fem | Conf Int | 100 Adult |
| 2007 | 13,600 | 201 | 155 | 356 | 14% | 1,322 | 52% | 878 | 34% | 2,556 | 1,276 | 15 | 12 | 27 | ± 2 | 66 | ± 3 | 52 |
| 2008 | 12,100 | 183 | 205 | 388 | 17% | 1,314 | 58% | 551 | 24% | 2,253 | 1,096 | 14 | 16 | 30 | ± 2 | 42 | ± 2 | 32 |
| 2009 | 12,500 | 128 | 169 | 297 | 15% | 1,048 | 53% | 647 | 32% | 1,992 | 1,140 | 12 | 16 | 28 | ± 2 | 62 | ± 4 | 48 |
| 2010 | 12,800 | 176 | 188 | 364 | 16% | 1,145 | 52% | 707 | 32% | 2,216 | 1,090 | 15 | 16 | 32 | ± 2 | 62 | ± 3 | 47 |
| 2011 | 12,000 | 118 | 205 | 323 | 16% | 1,071 | 53% | 613 | 31% | 2,007 | 1,071 | 11 | 19 | 30 | ± 2 | 57 | ± 3 | 44 |
| 2012 | 7,800 | 79 | 139 | 218 | 10% | 1,165 | 52% | 863 | 38% | 2,246 | 1,148 | 7 | 12 | 19 | ± 1 | 74 | ± 4 | 62 |

## 2013 HUNTING SEASONS
## UPPER SHOSHONE MULE DEER HERD (MD215)

| Hunt Area | Type | Dates of Seasons Opens | Closes | Quota | Limitations |
|---|---|---|---|---|---|
| 110 | | Oct. 15 | Nov. 10 | | General license; antlered deer |
| 111 | | Oct. 15 | Nov. 10 | | General license; antlered deer |
| | 6 | Oct. 15 | Nov. 10 | 25 | Limited quota; licenses doe or fawn valid off national forest |
| | 7 | Oct. 1 | Nov. 20 | 25 | Limited quota; doe or fawn |
| | 8 | Oct. 15 | Dec. 31 | 100 | Limited quota; doe or fawn white-tailed deer |
| 112, 113 | | Oct. 15 | Nov. 10 | | General license; antlered deer valid on national forest |
| | | Nov. 1 | Nov. 10 | | General license; any deer valid off national forest |
| | 6 | Oct. 15 | Nov. 10 | 25 | Limited quota; doe or fawn valid off national forest |
| | 8 | Oct. 15 | Dec. 31 | 100 | Limited quota; doe or fawn white-tailed deer |
| 114 | | Oct. 15 | Nov. 10 | | General license; antlered deer |
| 115 | | Sept. 10 | Oct. 22 | | General license; antlered deer |
| Archery 110-114 | | Sept. 1 | Sept. 30 | | Refer to Section 4 of this Chapter |
| 115 | | Sept. 1 | Sept. 9 | | Refer to Section 4 of this Chapter |

| Hunt Area | Type | Quota change from 2012 |
|---|---|---|
| 111 | 6 | -25 |
| | 7 | -25 |
| | 8 | +100 |
| 112, 113 | 6 | -25 |
| | 8 | +100 |
| **Total** | **6** | **-50** |
| | **7** | **-25** |
| | **8** | **+200** |
| **NR Quota** | **1,450** | **0** |

**Management Evaluation**

**Current Postseason Population Management Objective: 12,000**
**Management Strategy: Recreational**
**2012 Postseason Population Estimate: ~7,800**
**2013 Proposed Postseason Population Estimate: ~8,300**

**Herd Unit Issues.** The Upper Shoshone Herd Unit is dominated by migratory deer, although some non-migratory deer do exist in the North and South Fork Shoshone River valleys. These deer exhibit mediocre productivity as evidenced by the 20-year (1993-2012) average fawn:doe ratio of 61.8 fawns:100 does. Buck harvest is dictated by the influence of weather upon the timing of fall migrations and whether or not they arrive on low elevation winter ranges prior to the standard closing date of November 10. This has created a situation where buck harvest and consequently buck:doe ratios vary widely. In response to this variation, periodic 4-point regulations are implemented for 2 years to protect primarily yearling bucks and assist in recovery of buck:doe ratios. This fluctuation is represented in postseason buck:doe ratios, which have averaged 26.3 bucks:100 does over the past 20 years (1993-2012), but have ranged from 14:100 to 35:100.

The migratory nature of this deer herd creates difficulties in managing for stable buck:doe ratios. Low densities of deer on the vast summer ranges of the Absaroka Mountains are reflected in the relatively low harvest of deer early in the season. For example, over the last 25 years buck harvest in Area 115 (which has a September 10 opening date) has averaged 31 bucks/year. This is also reflected in check station records, which show that 75% of deer harvested each year are taken during the November portion of the season. Intense hunting pressure along restricted migration corridors during this time, particularly on the North Fork of the Shoshone River, has become an increasingly difficult situation to manage.

**Weather.** Weather conditions during the 2012 biological year were characterized by below normal spring-summer moisture, and mild winter conditions, with little snowfall and few extended periods of extremely cold temperatures.

**Habitat.** Two sagebrush transects are monitored in this herd unit; one in the North Fork of the Shoshone River and one in the South Fork of the Shoshone River. Annual production of sagebrush in 2011 was above the previous 8-year average in the North Fork of the Shoshone River and below average in the South Fork of the Shoshone River. Sagebrush utilization at these sites during the 2011-2012 winter was below average.

Below normal precipitation apparently did not impact fawn recruitment, as fawn:doe ratios were among the highest recorded in this herd unit. Perhaps the mild winter conditions the proceeding winter allowed does to come through winter in adequate condition, and movement to mountainous summer ranges (where precipitation was near normal) provided access to better quality forage.

**Field Data.** Buck:doe ratios collected in 2012 were 19:100, which is at a level that usually dictates implementation of a 4-point regulation (< 20:100). Due to the extremely open

conditions during the 2012-2013 winter, it is felt that this is an underrepresentation of the true buck:doe ratio. A very large fawn crop (74 fawns:100 does, the highest recorded in 30 years) was documented in 2012 as well, and these yearling bucks of 2013 can shoulder some of the harvest and not place all of the pressure on older age class deer as a 4-point regulation would. As the population will now be allowed to grow by another 35%, the sheer abundance of bucks will increase substantially as well, reducing the need for antler point restrictions. Therefore, we are not implementing a 4-point regulation, but will be prepared to do so if classification information from the 2013 season deems it necessary.

**Harvest Data.** Buck harvest (732 bucks in 2012) has not changed appreciably during the last 5 years (2008-2012), but remains within the range of buck harvest seen in this herd unit, as it varies from 300-400 bucks during years of 4-point regulations to 1,000-1,300 bucks following removal of the 4-point regulation or in years of high population sizes. Antlerless deer harvest was reduced in 2012, and represents the fewest antlerless deer harvested since 2001.

Hunter numbers have been declining in the Upper Shoshone Herd Unit, although not as precipitously as that seen in the Clark Fork Herd Unit. Resident hunters dropped from an average of 1,459/year for 1983-2007, to 1,063/year from 2007-2012, a drop of 27%. Nonresident hunter numbers during the same period dropped 17%, but happened as a result of the 16% reduction in the Region F nonresident quota in 2005 and 2007. Resident hunter numbers in 2012 were the lowest recorded in this herd unit. Whether this is due to lower deer numbers, or social changes in hunting participation is unknown.

**Population.** The "Time Specific Juvenile – Constant Adult Mortality Rate" (TSJ,CA) spreadsheet model was chosen to use for the post season population estimate of this herd, as the population trend appears to be relatively accurate. The postseason population estimate for 2012 is 7,800 deer, or 35% below the population objective, which is much lower than previous estimates. Under previous estimates, more conservative antlerless seasons were implemented in 2012 so the new lower estimate only means the deer herd will be allowed to grow further than previously planned.

**Management Summary**. With the intent of letting the population grow as fast as possible, doe/fawn harvest will be restricted as much as possible in 2013, and will likely be limited further in 2014. Conversely, we will allow additional opportunities to harvest antlerless white-tailed deer in Areas 111, 112, and 113. These seasons should result in post-season 2013 population near 8,300 deer and begin the approach to the objective of 12,000.

| INPUT | |
|---|---|
| **Species:** | Mule Deer |
| **Biologist:** | Doug McWhirter |
| **Herd Unit & No.:** | Upper Shoshone |
| **Model date:** | 02/26/13 |

☐ Clear form

| MODELS SUMMARY | | Fit | Relative AICc | Check best model to create report | Notes |
|---|---|---|---|---|---|
| **CJ,CA** | **Constant Juvenile & Adult Survival** | 142 | 152 | ☐ CJ,CA Model | |
| **SCJ,SCA** | **Semi-Constant Juvenile & Semi-Constant Adult Survival** | 186110 | 186119 | ☐ SCJ,SCA Mod | |
| **TSJ,CA** | **Time-Specific Juvenile & Constant Adult Survival** | 6 | 134 | ☑ TSJ,CA Model | |

**Population Estimates from Top Model**

| Year | Posthunt Population Est. | | Trend Count | Predicted Prehunt Population | | | Total | Predicted Posthunt Population | | | Total | Objective |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Field Est | Field SE | | Juveniles | Total Males | Females | | Juveniles | Total Males | Females | | |
| **1993** | | | | 3904 | 2775 | 7349 | 14028 | 3836 | 1810 | 6663 | 12309 | 12000 |
| **1994** | | | | 4988 | 3193 | 7126 | 15307 | 4950 | 1720 | 6774 | 13444 | 12000 |
| **1995** | | | | 3821 | 2684 | 6780 | 13286 | 3774 | 1569 | 6188 | 11531 | 12000 |
| **1996** | | | | 2616 | 2026 | 5770 | 10412 | 2585 | 781 | 5092 | 8457 | 12000 |
| **1997** | | | | 2578 | 1541 | 5035 | 9154 | 2523 | 1153 | 4699 | 8375 | 12000 |
| **1998** | | | | 3043 | 1684 | 4558 | 9286 | 3021 | 1279 | 4391 | 8692 | 12000 |
| **1999** | | | | 2764 | 1926 | 4448 | 9139 | 2760 | 1266 | 4357 | 8383 | 12000 |
| **2000** | | | | 3758 | 2268 | 4773 | 10800 | 3751 | 999 | 4688 | 9438 | 12000 |
| **2001** | | | | 3596 | 2485 | 5475 | 11556 | 3586 | 1211 | 5387 | 10185 | 12000 |
| **2002** | | | | 3014 | 2260 | 5645 | 10920 | 3009 | 1306 | 5457 | 9771 | 12000 |
| **2003** | | | | 3137 | 1763 | 5127 | 10027 | 3132 | 1171 | 4948 | 9250 | 12000 |
| **2004** | | | | 2965 | 2358 | 5419 | 10742 | 2962 | 1557 | 5230 | 9749 | 12000 |
| **2005** | | | | 3398 | 2576 | 5552 | 11526 | 3385 | 1881 | 5378 | 10644 | 12000 |
| **2006** | | | | 3576 | 2663 | 5498 | 11737 | 3553 | 1421 | 5334 | 10308 | 12000 |
| **2007** | | | | 3735 | 2704 | 5875 | 12313 | 3705 | 1503 | 5579 | 10787 | 12000 |
| **2008** | | | | 2217 | 2376 | 5680 | 10273 | 2194 | 1570 | 5233 | 8997 | 12000 |
| **2009** | | | | 3036 | 2259 | 5228 | 10524 | 2989 | 1361 | 4841 | 9191 | 12000 |
| **2010** | | | | 3098 | 2448 | 5269 | 10814 | 3064 | 1563 | 4962 | 9589 | 12000 |
| **2011** | | | | 2591 | 2012 | 4766 | 9369 | 2567 | 1317 | 4485 | 8368 | 12000 |
| **2012** | | | | 2992 | 1581 | 4148 | 8721 | 2975 | 766 | 4016 | 7756 | 12000 |
| **2013** | | | | 2654 | 1959 | 4593 | 9207 | 2638 | 1189 | 4483 | 8310 | 12000 |
| **2014** | | | | | | | | | | | | 12000 |
| **2015** | | | | | | | | | | | | 12000 |
| **2016** | | | | | | | | | | | | 12000 |
| **2017** | | | | | | | | | | | | 12000 |
| **2018** | | | | | | | | | | | | 12000 |
| **2019** | | | | | | | | | | | | 12000 |
| **2020** | | | | | | | | | | | | 12000 |
| **2021** | | | | | | | | | | | | 12000 |
| **2022** | | | | | | | | | | | | 12000 |
| **2023** | | | | | | | | | | | | 12000 |
| **2024** | | | | | | | | | | | | 12000 |
| **2025** | | | | | | | | | | | | 12000 |

## Survival and Initial Population Estimates

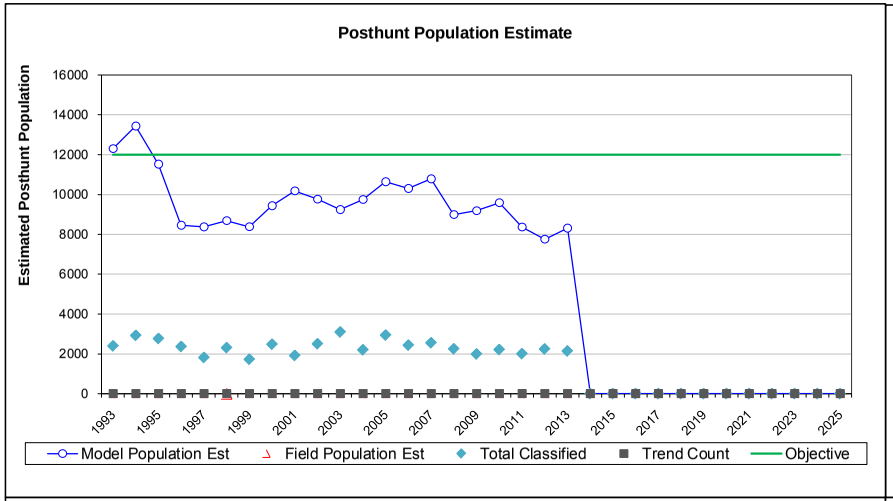
| Year | Annual Juvenile Survival Rates | | | Annual Adult Survival Rates | | |
|---|---|---|---|---|---|---|
| | Model Est | Field Est | SE | Model Est | Field Est | SE |
| 1993 | 0.90 | | | 0.81 | | |
| 1994 | 0.52 | | | 0.81 | | |
| 1995 | 0.40 | | | 0.81 | | |
| 1996 | 0.70 | | | 0.81 | | |
| 1997 | 0.59 | | | 0.81 | | |
| 1998 | 0.59 | | | 0.81 | | |
| 1999 | 0.90 | | | 0.81 | | |
| 2000 | 0.89 | | | 0.81 | | |
| 2001 | 0.71 | | | 0.81 | | |
| 2002 | 0.47 | | | 0.81 | | |
| 2003 | 0.90 | | | 0.81 | | |
| 2004 | 0.89 | | | 0.81 | | |
| 2005 | 0.67 | | | 0.81 | | |
| 2006 | 0.87 | | | 0.81 | | |
| 2007 | 0.63 | | | 0.81 | | |
| 2008 | 0.90 | | | 0.81 | | |
| 2009 | 0.90 | | | 0.81 | | |
| 2010 | 0.49 | | | 0.81 | | |
| 2011 | 0.40 | | | 0.81 | | |
| 2012 | 0.90 | | | 0.81 | | |
| 2013 | 0.65 | | | 0.81 | | |
| 2014 | | | | | | |
| 2015 | | | | | | |
| 2016 | | | | | | |
| 2017 | | | | | | |
| 2018 | | | | | | |
| 2019 | | | | | | |
| 2020 | | | | | | |
| 2021 | | | | | | |
| 2022 | | | | | | |
| 2023 | | | | | | |
| 2024 | | | | | | |
| 2025 | | | | | | |

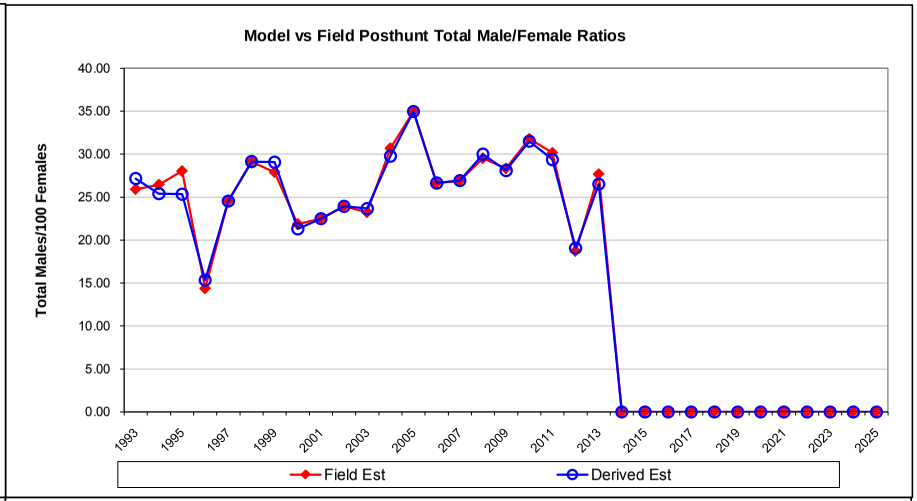
| Parameters: | Optim cells |
|---|---|
| | |
| Adult Survival = | 0.810 |
| Initial Total Male Pop/10,000 = | 0.181 |
| Initial Female Pop/10,000 = | 0.666 |

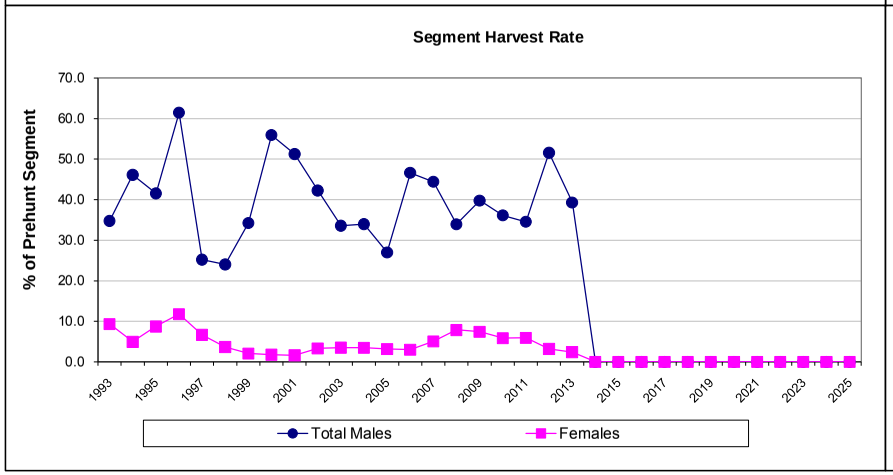
| MODEL ASSUMPTIONS | |
|---|---|
| Sex Ratio (% Males) = | 50% |
| Wounding Loss (total males) = | 10% |
| Wounding Loss (females) = | 10% |
| Wounding Loss (juveniles) = | 10% |

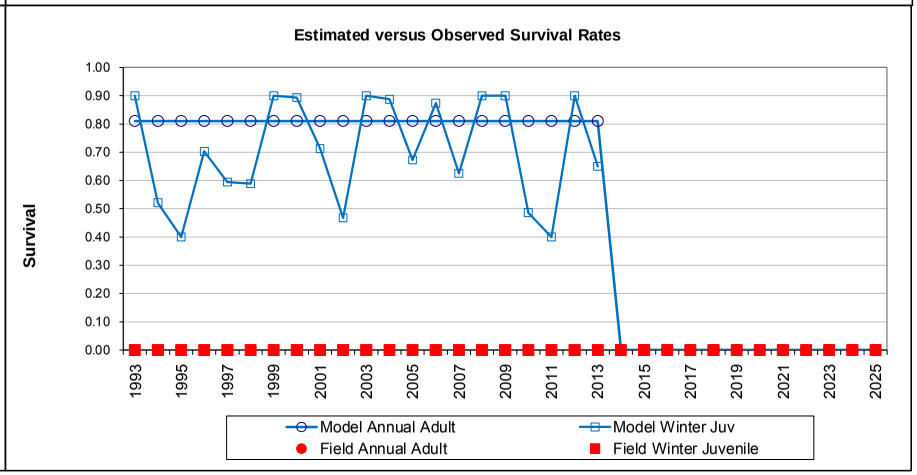
| Year | Classification Counts: Juvenile/Female Ratio | | | Classification Counts: Total Male/Female Ratio | | | Classification Counts | | | | Harvest: Segment Harvest Rate (% of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Derived Est | Field Est | Field SE | Derived Est | Field Est w/o bull adj | Field SE | Juv | Males | Females | Total Harvest | Total Males | Females |
| 1993 | | 57.57 | 2.63 | 27.16 | 25.92 | 1.58 | 62 | 877 | 624 | 1563 | 34.8 | 9.3 |
| 1994 | | 73.07 | 2.94 | 25.39 | 26.45 | 1.51 | 34 | 1339 | 320 | 1693 | 46.1 | 4.9 |
| 1995 | | 60.98 | 2.59 | 25.35 | 28.04 | 1.56 | 43 | 1014 | 538 | 1595 | 41.6 | 8.7 |
| 1996 | | 50.77 | 2.31 | 15.34 | 14.37 | 1.07 | 28 | 1132 | 617 | 1777 | 61.5 | 11.8 |
| 1997 | | 53.68 | 2.85 | 24.54 | 24.53 | 1.73 | 50 | 353 | 305 | 708 | 25.2 | 6.7 |
| 1998 | | 68.81 | 3.15 | 29.14 | 29.13 | 1.80 | 20 | 368 | 152 | 540 | 24.0 | 3.7 |
| 1999 | | 63.34 | 3.39 | 29.07 | 27.91 | 1.99 | 4 | 600 | 83 | 687 | 34.3 | 2.1 |
| 2000 | | 80.00 | 3.42 | 21.31 | 21.87 | 1.47 | 7 | 1154 | 77 | 1238 | 56.0 | 1.8 |
| 2001 | | 66.57 | 3.31 | 22.48 | 22.49 | 1.65 | 9 | 1158 | 80 | 1247 | 51.3 | 1.6 |
| 2002 | | 55.14 | 2.47 | 23.93 | 23.93 | 1.46 | 5 | 868 | 171 | 1044 | 42.2 | 3.3 |
| 2003 | | 63.30 | 2.49 | 23.67 | 23.23 | 1.31 | 5 | 538 | 163 | 706 | 33.6 | 3.5 |
| 2004 | | 56.63 | 2.75 | 29.78 | 30.70 | 1.85 | 3 | 728 | 172 | 903 | 34.0 | 3.5 |
| 2005 | | 62.95 | 2.63 | 34.97 | 34.97 | 1.78 | 11 | 632 | 158 | 801 | 27.0 | 3.1 |
| 2006 | | 66.61 | 2.97 | 26.64 | 26.65 | 1.64 | 21 | 1129 | 149 | 1299 | 46.6 | 3.0 |
| 2007 | | 66.41 | 2.89 | 26.93 | 26.93 | 1.61 | 27 | 1092 | 269 | 1388 | 44.4 | 5.0 |
| 2008 | | 41.93 | 2.13 | 29.99 | 29.53 | 1.71 | 21 | 733 | 406 | 1160 | 33.9 | 7.9 |
| 2009 | | 61.74 | 3.09 | 28.11 | 28.34 | 1.86 | 43 | 817 | 352 | 1212 | 39.8 | 7.4 |
| 2010 | | 61.75 | 2.95 | 31.51 | 31.79 | 1.91 | 31 | 804 | 279 | 1114 | 36.1 | 5.8 |
| 2011 | | 57.24 | 2.90 | 29.37 | 30.16 | 1.91 | 22 | 632 | 256 | 910 | 34.6 | 5.9 |
| 2012 | | 74.08 | 3.33 | 19.06 | 18.71 | 1.38 | 16 | 741 | 120 | 877 | 51.6 | 3.2 |
| 2013 | | 58.83 | 2.85 | 26.52 | 27.68 | 1.75 | 15 | 700 | 100 | 815 | 39.3 | 2.4 |
| 2014 | | | | | | | | | | | | |
| 2015 | | | | | | | | | | | | |
| 2016 | | | | | | | | | | | | |
| 2017 | | | | | | | | | | | | |
| 2018 | | | | | | | | | | | | |
| 2019 | | | | | | | | | | | | |
| 2020 | | | | | | | | | | | | |
| 2021 | | | | | | | | | | | | |
| 2022 | | | | | | | | | | | | |
| 2023 | | | | | | | | | | | | |
| 2024 | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | |

## FIGURES



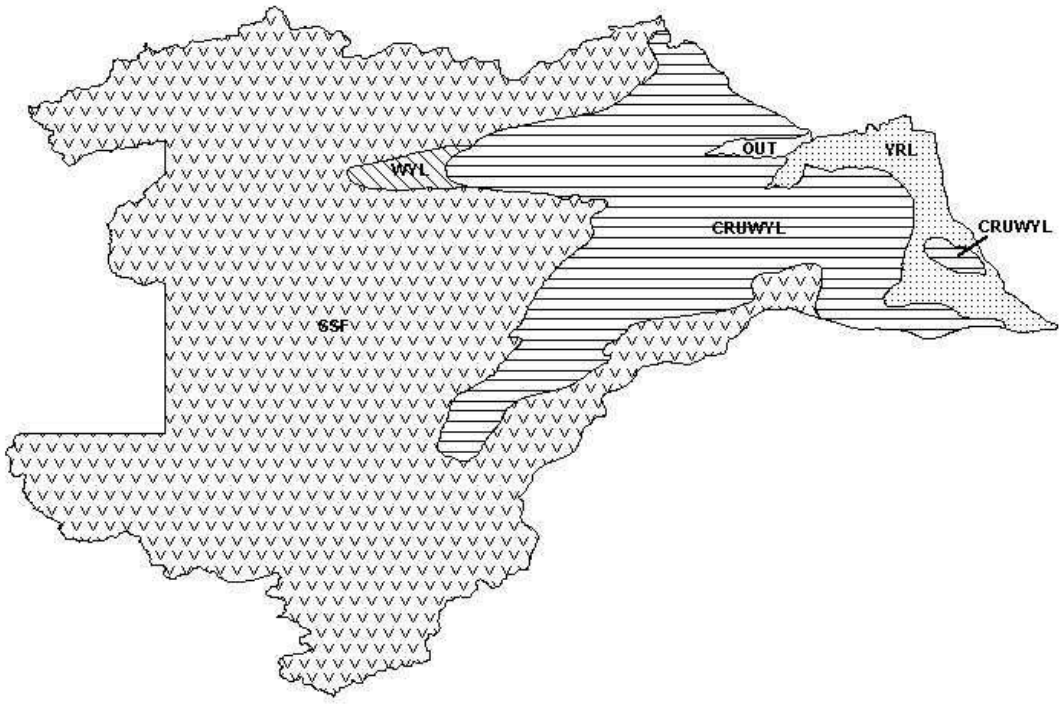




**Comments:**

## END




Mule Deer (MD215) - Upper Shoshone
HA 110-115
Revised - 6/94

# 2012 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2012 - 5/31/2013

HERD: MD216 - CLARKS FORK

HUNT AREAS: 105-106, 109, 121

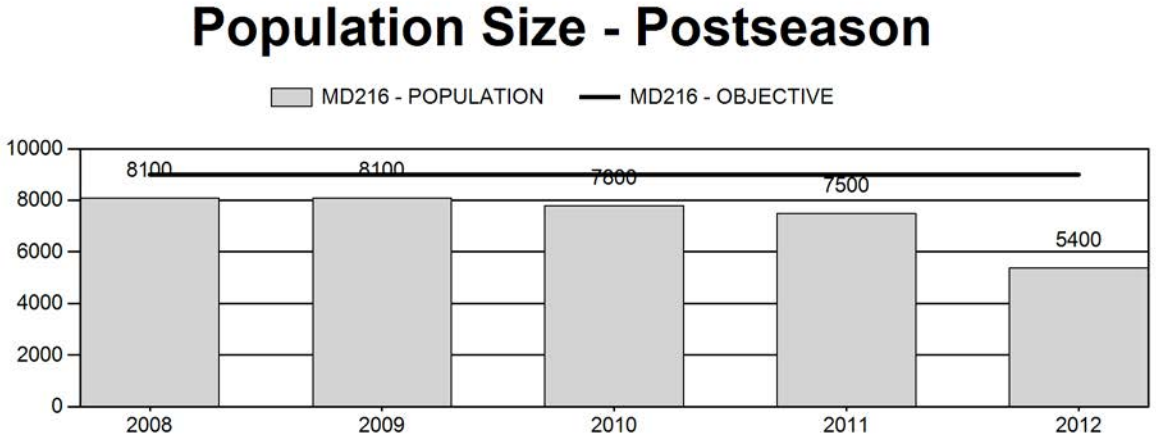
PREPARED BY: DOUG MCWHIRTER

| | 2007 - 2011 Average | 2012 | 2013 Proposed |
|---|---|---|---|
| Population: | 7,920 | 5,400 | 5,000 |
| Harvest: | 822 | 1,005 | 1,010 |
| Hunters: | 1,620 | 1,651 | 1,700 |
| Hunter Success: | 51% | 61% | 59% |
| Active Licenses: | 1,655 | 1,808 | 1,800 |
| Active License Percent: | 50% | 56% | 56% |
| Recreation Days: | 6,930 | 8,128 | 8,300 |
| Days Per Animal: | 8.4 | 8.1 | 8.2 |
| Males per 100 Females | 27 | 22 | |
| Juveniles per 100 Females | 57 | 70 | |

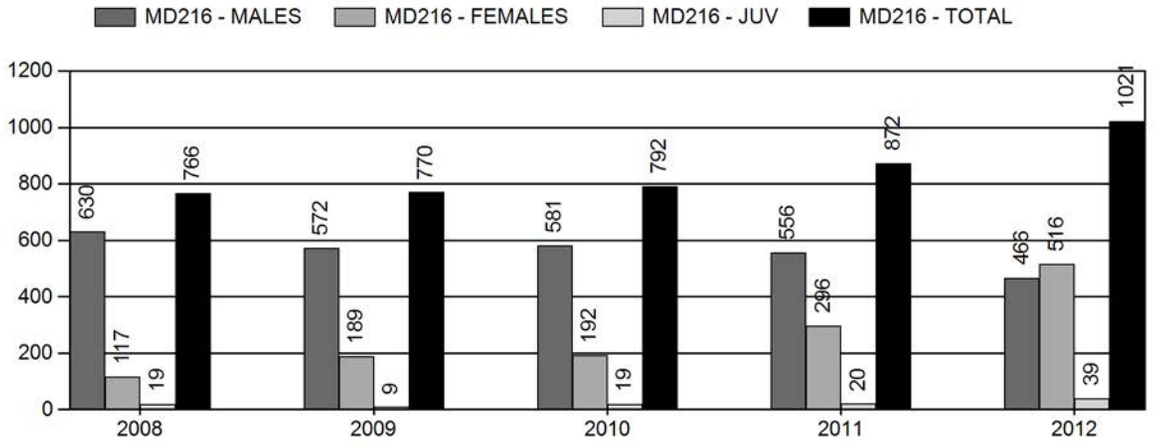
| | |
|---|---|
| Population Objective: | 9,000 |
| Management Strategy: | Recreational |
| Percent population is above (+) or below (-) objective: | -40% |
| Number of years population has been + or - objective in recent trend: | 4 |
| Model Date: | 2/26/2013 |

**Proposed harvest rates (percent of pre-season estimate for each sex/age group):**

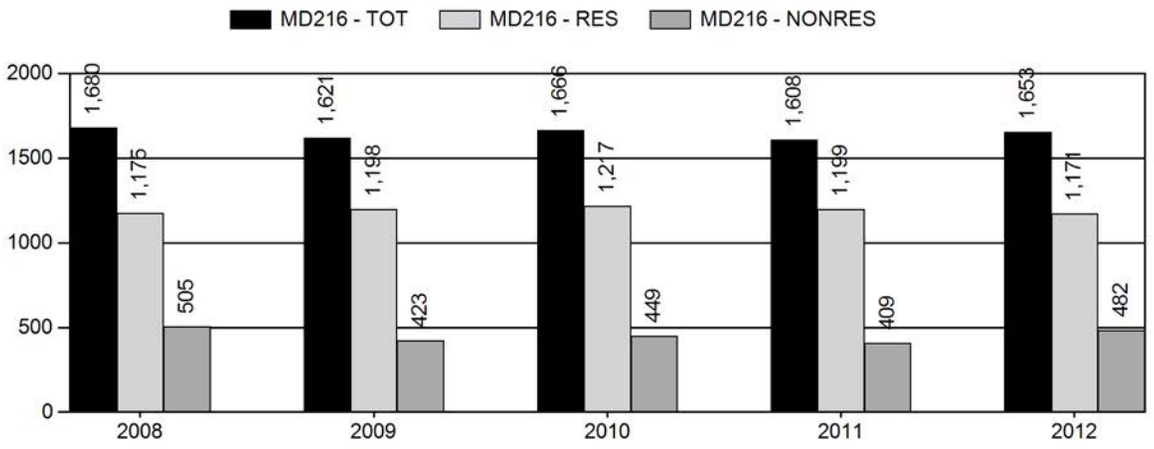
| | JCR Year | Proposed |
|---|---|---|
| Females ≥ 1 year old: | 10.7% | 17.4% |
| Males ≥ 1 year old: | 34.6% | 35.8% |
| Juveniles (< 1 year old): | 2.0% | 1.0% |
| Total: | 12.98% | 16.48% |
| Proposed change in post-season population: | -6.9% | -7.0% |



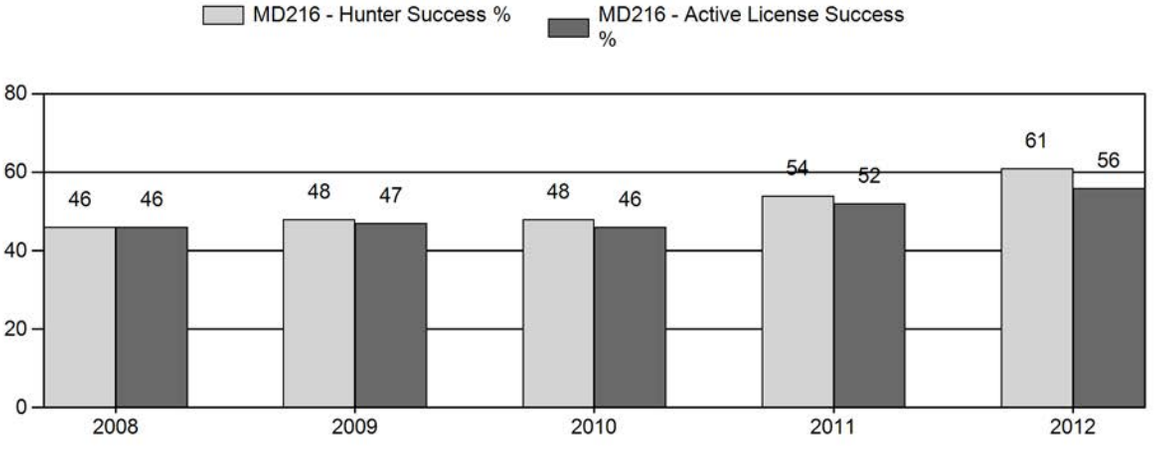
# Harvest



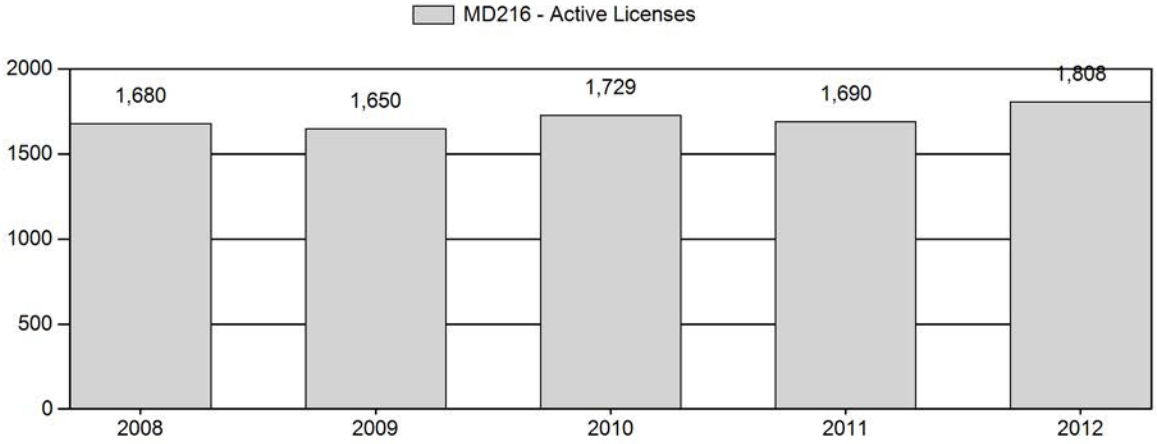

# Number of Hunters



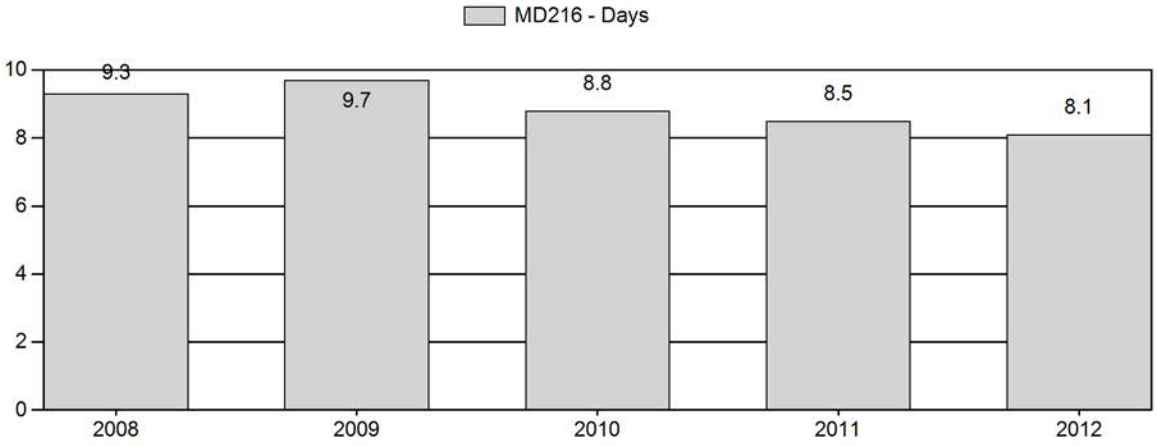

# Harvest Success



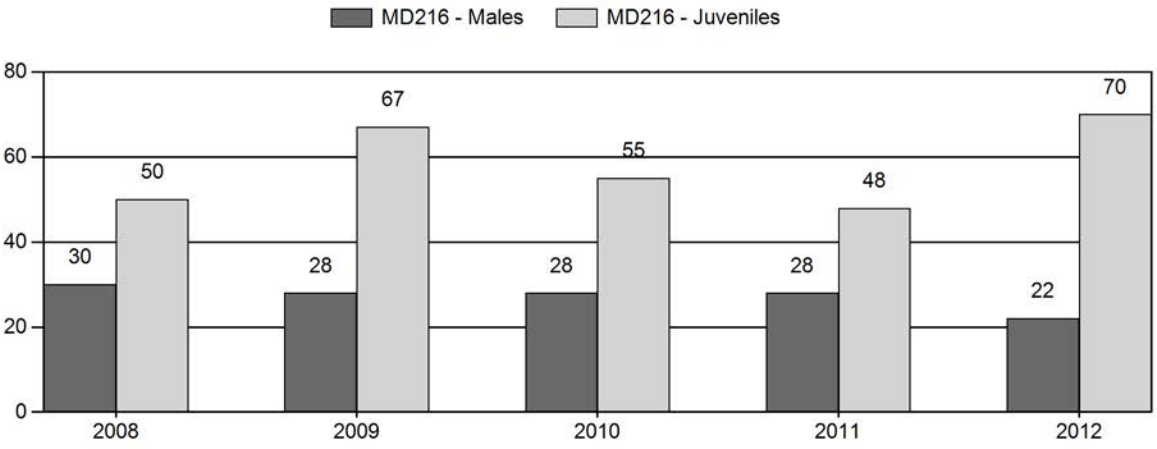
# Active Licenses




# Days per Animal Harvested




# Postseason Animals per 100 Females



## 2007 - 2012 Postseason Classification Summary

### for Mule Deer Herd MD216 - CLARKS FORK

| | | MALES | | | | FEMALES | | JUVENILES | | | | Males to 100 Females | | | | Young to | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Post Pop | Ylg | Adult | Total | % | Total | % | Total | % | Tot Cls | Cls Obj | Yling | Adult | Total | Conf Int | 100 Fem | Conf Int | 100 Adult |
| 2007 | 8,100 | 71 | 83 | 154 | 11% | 793 | 55% | 508 | 35% | 1,455 | 1,097 | 9 | 10 | 19 | ± 2 | 64 | ± 4 | 54 |
| 2008 | 8,100 | 74 | 117 | 191 | 17% | 628 | 55% | 314 | 28% | 1,133 | 1,021 | 12 | 19 | 30 | ± 3 | 50 | ± 4 | 38 |
| 2009 | 8,100 | 76 | 146 | 222 | 14% | 789 | 51% | 527 | 34% | 1,538 | 1,219 | 10 | 19 | 28 | ± 2 | 67 | ± 4 | 52 |
| 2010 | 7,800 | 89 | 135 | 224 | 16% | 788 | 55% | 431 | 30% | 1,443 | 1,043 | 11 | 17 | 28 | ± 2 | 55 | ± 4 | 43 |
| 2011 | 7,500 | 52 | 133 | 185 | 16% | 656 | 57% | 315 | 27% | 1,156 | 1,051 | 8 | 20 | 28 | ± 3 | 48 | ± 4 | 37 |
| 2012 | 5,400 | 23 | 62 | 85 | 11% | 386 | 52% | 270 | 36% | 741 | 947 | 6 | 16 | 22 | ± 3 | 70 | ± 7 | 57 |

## 2013 HUNTING SEASONS
## CLARKS FORK MULE DEER HERD (MD216)

| Hunt Area | Type | Dates of Seasons Opens | Closes | Quota | Limitations |
|---|---|---|---|---|---|
| 105 | | Oct. 1 | Oct. 31 | | General license; antlered deer valid on national forest |
| | | Nov. 1 | Nov. 5 | | General license; any deer valid off national forest |
| | | Nov. 6 | Nov. 30 | | General license; antlerless deer valid off national forest |
| | 6 | Nov. 1 | Nov. 30 | 200 | Limited quota; doe or fawn valid off national forest |
| 106 | | Oct. 1 | Oct. 31 | | General license; antlered mule deer or any white-tailed deer |
| 105, 106, 109 | 1 | Nov. 1 | Nov. 15 | 50 | Limited quota; antlered deer |
| 109 | 8 | Nov. 15 | Nov. 30 | 25 | Limited quota; doe or fawn white-tailed deer |
| 121 | | Nov. 1 | Nov. 10 | | General license; any deer |
| | | Nov. 11 | Nov. 30 | | General license; antlerless deer |
| | 3 | Nov. 1 | Nov. 30 | 100 | Limited quota; any white-tailed deer |
| | 6 | Oct. 15 | Dec. 31 | 500 | Limited quota; doe or fawn |
| Archery 105, 106, 109 | | Sept. 1 | Sept. 30 | | Refer to Section 4 of this Chapter |
| 121 | | Sept. 15 | Oct. 14 | | Refer to Section 4 of this Chapter |

| Hunt Area | Type | Quota change from 2012 |
|---|---|---|
| | | No Change |
| **Total** | | **No Change** |
| **NR Quota** | **1,450** | **0** |

**Management Evaluation**

**Current Postseason Population Management Objective: 9,000**
**Management Strategy: Recreational**
**2012 Postseason Population Estimate: ~5,400**
**2013 Proposed Postseason Population Estimate: ~5,000**

**Herd Unit Issues.** Much of the Clarks Fork Herd Unit is characterized by migratory deer (Hunt Areas 105, 106, 109), but substantial numbers of non-migratory deer associated with agricultural areas are found in Area 105 and 121. Migratory deer exhibit poor productivity, while deer associated with agricultural fields have much higher productivity. Consequently, damage situations arise with non-migratory deer in Area 105 and 121, while poor productivity requires conservative management of migratory deer. This situation is further complicated by the skewed classification effort directed at migratory deer and the lack of classification data from Area 121. Deer management in Area 121 is driven almost exclusively by landowner tolerance, and therefore little effort is placed on gathering population data from this segment of the Clarks Fork Herd Unit.

**Weather.** Weather conditions during the 2012 biological year were characterized by below normal spring-summer moisture, and mild winter conditions, with little snowfall and few extended periods of extremely cold temperatures.

**Habitat.** No habitat monitoring data is collected in this herd unit. Below normal precipitation apparently did not impact fawn recruitment, as fawn:doe ratios were among the highest recorded in this herd unit. Perhaps the mild winter conditions the proceeding winter allowed does to come through winter in adequate condition, and movement to mountainous summer ranges (where precipitation was near normal) provided access to better quality forage.

**Field Data.** Fawn recruitment in 2012 was very good, at 70 fawns:100 does. This compares to the most recent 10-year (1993-2012) average fawn:doe ratio of 58.5 fawns:100 does (range 48:100 – 70:100). Buck ratios dropped in 2012 (to 22 bucks:100 does). Buck ratios averaged 24.1 bucks:100 does over this same period (range 19:100 – 30:100), but recently have trended higher (27.4 bucks:100 does) since removing the General License season in November in Area 106 and portions of Area 105. It is likely that buck ratios were underestimated in 2012 due to the extremely open conditions experienced during postseason surveys.

**Harvest Data.** Since removing the General License season in November in Area 106 and portions of Area 105, buck harvest has declined as intended, resulting in higher postseason buck:doe ratios and more older age class bucks in the population. This was accomplished primarily by reducing hunter numbers. For example, in Area 106, 2008-2012 hunter numbers declined from the previous 5-year (2003-2007) average of 587 hunters/year to 495 hunters/year, while hunter success remained similar (approximately 37%) over both periods. This continues a previously existing trend in declining hunter numbers, as there has been a 27% decline in nonresident hunters and a 41% decline in resident hunters in Area 106, when the last 5 years (2008-2012) are compared to the previous 15-year average (1993-2007). Whether this is due to lower deer numbers, or social changes in hunting participation is unknown. Regardless, it

appears as though current management in Hunt Areas 105, 106, and 109 is preserving buck:doe ratios at acceptable levels.

Harvest of deer in the agricultural areas of Areas 105 and 121 resulted in the highest harvest of antlerless deer on record for either hunt area. These efforts will continue in order to address damage concerns on private lands.

**Population.** The "Time Specific Juvenile – Constant Adult Mortality Rate" (TSJ,CA) spreadsheet model was chosen to use for the post season population estimate of this herd, as the population trend appears to be reasonable. The postseason population estimate for 2012 is 5,400 deer, or 40% below the population objective. Problems with this model include the exclusive use of migratory deer classification data to model a herd that incorporates non-migratory deer harvest (the deer harvest provided by non-migratory deer cannot be supported by the productivity levels of migratory deer). This situation is to be remedied when this and the Shoshone River Deer Herd Units undergo Herd Unit Review in the near future.

**Management Summary**. We will continue with the current management structure for migratory deer (which consists of conservative buck seasons, with no antlerless harvest), while continuing to target non-migratory deer in agricultural areas with lengthy general antlerless seasons and abundant doe/fawn permits (as was initiated in 2012). Additional opportunities to harvest white-tailed deer will be provided in Area 106. The 2013 seasons should result in post-season 2013 population near 5,000 deer, while maintaining improved buck ratios in Hunt Areas 105, 106, and 109, and addressing damage situations in Area 105 and 121.

| INPUT | |
|---|---|
| **Species:** | Deer |
| **Biologist:** | Doug McWhirter |
| **Herd Unit & No.:** | Clarks Fork |
| **Model date:** | 02/26/13 |

☑ Clear form

| MODELS SUMMARY | | Fit | Relative AICc | Check best model to create report | Notes |
|---|---|---|---|---|---|
| **CJ,CA** | **Constant Juvenile & Adult Survival** | 99 | 108 | ☐ CJ,CA Model | |
| **SCJ,SCA** | **Semi-Constant Juvenile & Semi-Constant Adult Survival** | 3677829 | 3677838 | ☐ SCJ,SCA Mod | |
| **TSJ,CA** | **Time-Specific Juvenile & Constant Adult Survival** | 5 | 133 | ☑ TSJ,CA Model | |

**Population Estimates from Top Model**

| Year | Posthunt Population Est. | | Trend Count | Predicted Prehunt Population | | | Total | Predicted Posthunt Population | | | Total | Objective |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Field Est | Field SE | | Juveniles | Total Males | Females | | Juveniles | Total Males | Females | | |
| **1993** | | | | 2728 | 2016 | 5631 | 10376 | 2685 | 1375 | 5166 | 9226 | 9000 |
| **1994** | | | | 3613 | 2335 | 5441 | 11390 | 3573 | 1469 | 5148 | 10190 | 9000 |
| **1995** | | | | 3557 | 2071 | 5085 | 10713 | 3552 | 1358 | 4886 | 9796 | 9000 |
| **1996** | | | | 2982 | 1823 | 4714 | 9519 | 2982 | 1176 | 4604 | 8762 | 9000 |
| **1997** | | | | 2806 | 1567 | 4376 | 8750 | 2806 | 1110 | 4213 | 8129 | 9000 |
| **1998** | | | | 2223 | 1600 | 4144 | 7967 | 2221 | 1107 | 3993 | 7320 | 9000 |
| **1999** | | | | 2408 | 1425 | 3790 | 7623 | 2396 | 742 | 3685 | 6823 | 9000 |
| **2000** | | | | 2601 | 1612 | 4024 | 8237 | 2592 | 854 | 3948 | 7394 | 9000 |
| **2001** | | | | 2695 | 1711 | 4246 | 8651 | 2676 | 954 | 4153 | 7783 | 9000 |
| **2002** | | | | 2236 | 1815 | 4436 | 8487 | 2225 | 1074 | 4343 | 7642 | 9000 |
| **2003** | | | | 2121 | 1325 | 4003 | 7450 | 2111 | 781 | 3903 | 6795 | 9000 |
| **2004** | | | | 2101 | 1228 | 3786 | 7115 | 2094 | 766 | 3672 | 6532 | 9000 |
| **2005** | | | | 2205 | 1218 | 3599 | 7021 | 2205 | 785 | 3505 | 6495 | 9000 |
| **2006** | | | | 2422 | 1593 | 3822 | 7837 | 2418 | 831 | 3736 | 6985 | 9000 |
| **2007** | | | | 2607 | 1769 | 4149 | 8526 | 2605 | 852 | 4067 | 7525 | 9000 |
| **2008** | | | | 2209 | 1871 | 4505 | 8584 | 2188 | 1178 | 4376 | 7742 | 9000 |
| **2009** | | | | 2837 | 1820 | 4441 | 9098 | 2827 | 1191 | 4233 | 8251 | 9000 |
| **2010** | | | | 2253 | 1799 | 4291 | 8343 | 2232 | 1160 | 4080 | 7472 | 9000 |
| **2011** | | | | 1779 | 1592 | 3985 | 7355 | 1757 | 980 | 3659 | 6396 | 9000 |
| **2012** | | | | 1996 | 1155 | 3349 | 6500 | 1951 | 654 | 2790 | 5395 | 9000 |
| **2013** | | | | 1549 | 1414 | 3164 | 6127 | 1494 | 908 | 2614 | 5016 | 9000 |
| **2014** | | | | | | | | | | | | 9000 |
| **2015** | | | | | | | | | | | | 9000 |
| **2016** | | | | | | | | | | | | 9000 |
| **2017** | | | | | | | | | | | | 9000 |
| **2018** | | | | | | | | | | | | 9000 |
| **2019** | | | | | | | | | | | | 9000 |
| **2020** | | | | | | | | | | | | 9000 |
| **2021** | | | | | | | | | | | | 9000 |
| **2022** | | | | | | | | | | | | 9000 |
| **2023** | | | | | | | | | | | | 9000 |
| **2024** | | | | | | | | | | | | 9000 |
| **2025** | | | | | | | | | | | | 9000 |

## Survival and Initial Population Estimates

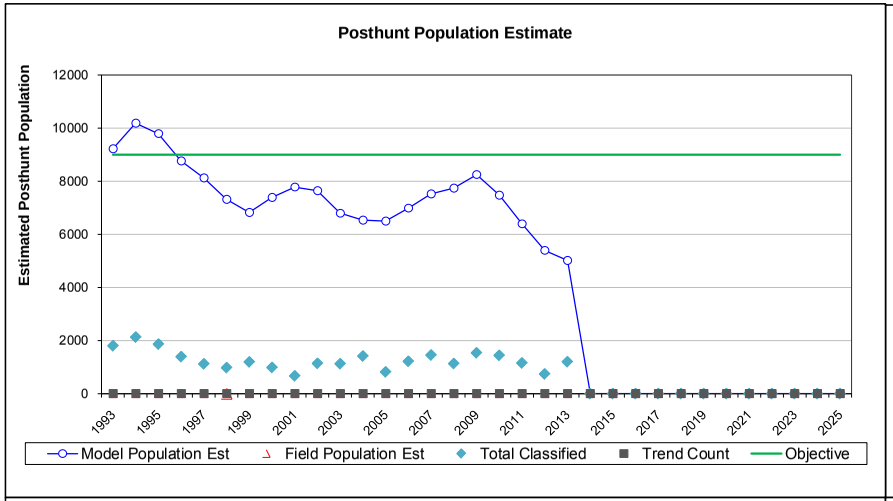
| Year | Annual Juvenile Survival Rates | | | Annual Adult Survival Rates | | |
|---|---|---|---|---|---|---|
| | Model Est | Field Est | SE | Model Est | Field Est | SE |
| 1993 | 0.90 | | | 0.82 | | |
| 1994 | 0.49 | | | 0.82 | | |
| 1995 | 0.40 | | | 0.82 | | |
| 1996 | 0.40 | | | 0.82 | | |
| 1997 | 0.49 | | | 0.82 | | |
| 1998 | 0.47 | | | 0.82 | | |
| 1999 | 0.84 | | | 0.82 | | |
| 2000 | 0.78 | | | 0.82 | | |
| 2001 | 0.77 | | | 0.82 | | |
| 2002 | 0.40 | | | 0.82 | | |
| 2003 | 0.56 | | | 0.82 | | |
| 2004 | 0.56 | | | 0.82 | | |
| 2005 | 0.86 | | | 0.82 | | |
| 2006 | 0.90 | | | 0.82 | | |
| 2007 | 0.90 | | | 0.82 | | |
| 2008 | 0.78 | | | 0.82 | | |
| 2009 | 0.58 | | | 0.82 | | |
| 2010 | 0.57 | | | 0.82 | | |
| 2011 | 0.40 | | | 0.82 | | |
| 2012 | 0.90 | | | 0.82 | | |
| 2013 | 0.65 | | | 0.82 | | |
| 2014 | | | | | | |
| 2015 | | | | | | |
| 2016 | | | | | | |
| 2017 | | | | | | |
| 2018 | | | | | | |
| 2019 | | | | | | |
| 2020 | | | | | | |
| 2021 | | | | | | |
| 2022 | | | | | | |
| 2023 | | | | | | |
| 2024 | | | | | | |
| 2025 | | | | | | |

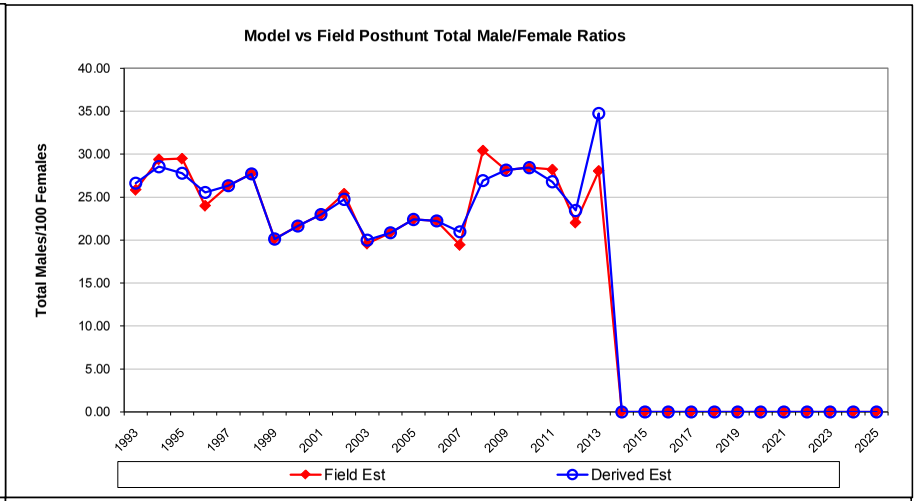
| Parameters: | Optim cells |
|---|---|
| | |
| Adult Survival = | 0.819 |
| Initial Total Male Pop/10,000 = | 0.138 |
| Initial Female Pop/10,000 = | 0.517 |

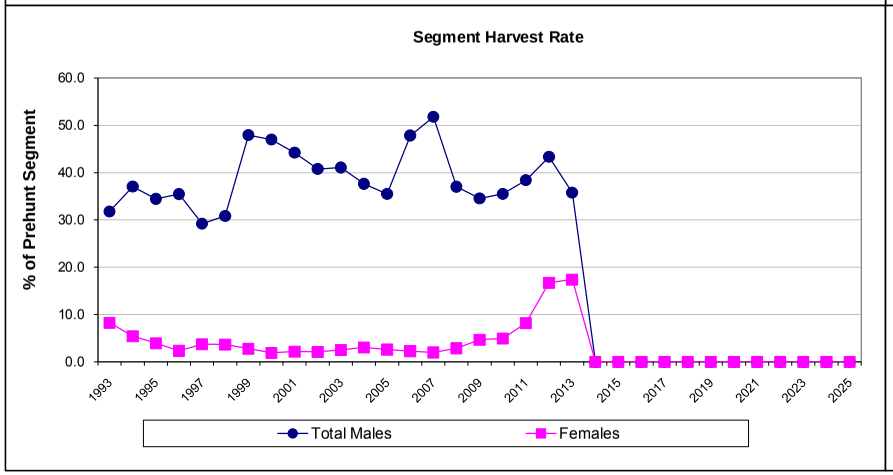
| MODEL ASSUMPTIONS | |
|---|---|
| Sex Ratio (% Males) = | 50% |
| Wounding Loss (total males) = | 10% |
| Wounding Loss (females) = | 10% |
| Wounding Loss (juveniles) = | 10% |

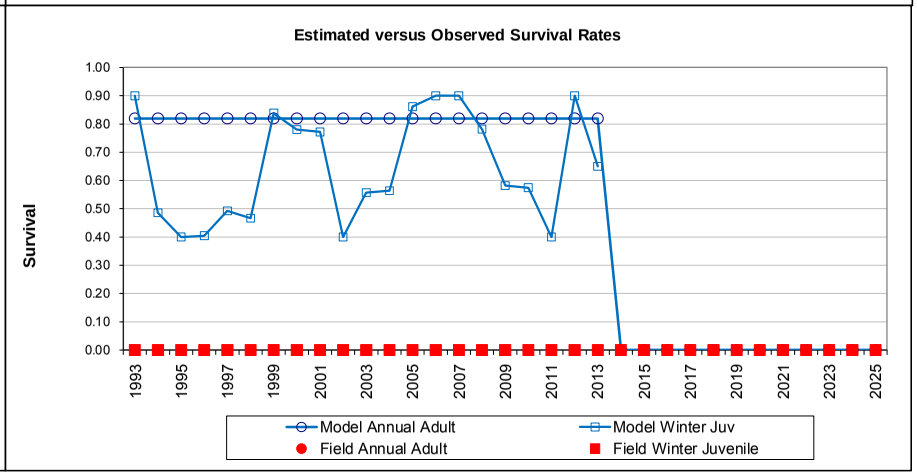
| Year | Classification Counts: Juvenile/Female Ratio | | | Classification Counts: Total Male/Female Ratio | | | Harvest | | | | Harvest: Segment Harvest Rate (% of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Derived Est | Field Est | Field SE | Derived Est | Field Est w/o bull adj | Field SE | Juv | Males | Females | Total Harvest | Total Males | Females |
| 1993 | | 51.97 | 2.79 | 26.62 | 25.84 | 1.79 | 39 | 583 | 423 | 1045 | 31.8 | 8.3 |
| 1994 | | 69.40 | 3.31 | 28.54 | 29.38 | 1.88 | 37 | 787 | 267 | 1091 | 37.1 | 5.4 |
| 1995 | | 72.70 | 3.69 | 27.78 | 29.47 | 2.03 | 4 | 649 | 181 | 834 | 34.5 | 3.9 |
| 1996 | | 64.77 | 3.80 | 25.54 | 23.98 | 2.01 | 0 | 588 | 100 | 688 | 35.5 | 2.3 |
| 1997 | | 66.61 | 4.37 | 26.33 | 26.33 | 2.39 | 0 | 416 | 148 | 564 | 29.2 | 3.7 |
| 1998 | | 55.62 | 4.03 | 27.71 | 27.72 | 2.57 | 2 | 449 | 137 | 588 | 30.9 | 3.6 |
| 1999 | | 65.02 | 4.08 | 20.12 | 20.12 | 1.93 | 11 | 621 | 95 | 727 | 47.9 | 2.8 |
| 2000 | | 65.65 | 4.54 | 21.63 | 21.63 | 2.23 | 8 | 689 | 69 | 766 | 47.0 | 1.9 |
| 2001 | | 64.43 | 5.45 | 22.97 | 22.97 | 2.81 | 17 | 688 | 84 | 789 | 44.2 | 2.2 |
| 2002 | | 51.24 | 3.46 | 24.74 | 25.39 | 2.22 | 10 | 673 | 85 | 768 | 40.8 | 2.1 |
| 2003 | | 54.08 | 3.58 | 20.00 | 19.57 | 1.90 | 9 | 495 | 91 | 595 | 41.1 | 2.5 |
| 2004 | | 57.04 | 3.35 | 20.85 | 20.85 | 1.78 | 6 | 420 | 104 | 530 | 37.6 | 3.0 |
| 2005 | | 62.90 | 4.81 | 22.40 | 22.40 | 2.49 | 0 | 393 | 85 | 478 | 35.5 | 2.6 |
| 2006 | | 64.72 | 4.04 | 22.23 | 22.24 | 2.04 | 4 | 693 | 78 | 775 | 47.9 | 2.2 |
| 2007 | | 64.06 | 3.64 | 20.96 | 19.42 | 1.71 | 2 | 833 | 75 | 910 | 51.8 | 2.0 |
| 2008 | | 50.00 | 3.46 | 26.92 | 30.41 | 2.51 | 19 | 630 | 117 | 766 | 37.0 | 2.9 |
| 2009 | | 66.79 | 3.76 | 28.14 | 28.14 | 2.14 | 9 | 572 | 189 | 770 | 34.6 | 4.7 |
| 2010 | | 54.70 | 3.28 | 28.43 | 28.43 | 2.15 | 19 | 581 | 192 | 792 | 35.5 | 4.9 |
| 2011 | | 48.02 | 3.29 | 26.79 | 28.20 | 2.35 | 20 | 556 | 296 | 872 | 38.4 | 8.2 |
| 2012 | | 69.95 | 5.55 | 23.44 | 22.02 | 2.64 | 41 | 455 | 509 | 1005 | 43.4 | 16.7 |
| 2013 | | 57.16 | 3.72 | 34.74 | 28.04 | 2.35 | 50 | 460 | 500 | 1010 | 35.8 | 17.4 |
| 2014 | | | | | | | | | | | | |
| 2015 | | | | | | | | | | | | |
| 2016 | | | | | | | | | | | | |
| 2017 | | | | | | | | | | | | |
| 2018 | | | | | | | | | | | | |
| 2019 | | | | | | | | | | | | |
| 2020 | | | | | | | | | | | | |
| 2021 | | | | | | | | | | | | |
| 2022 | | | | | | | | | | | | |
| 2023 | | | | | | | | | | | | |
| 2024 | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | |

## FIGURES



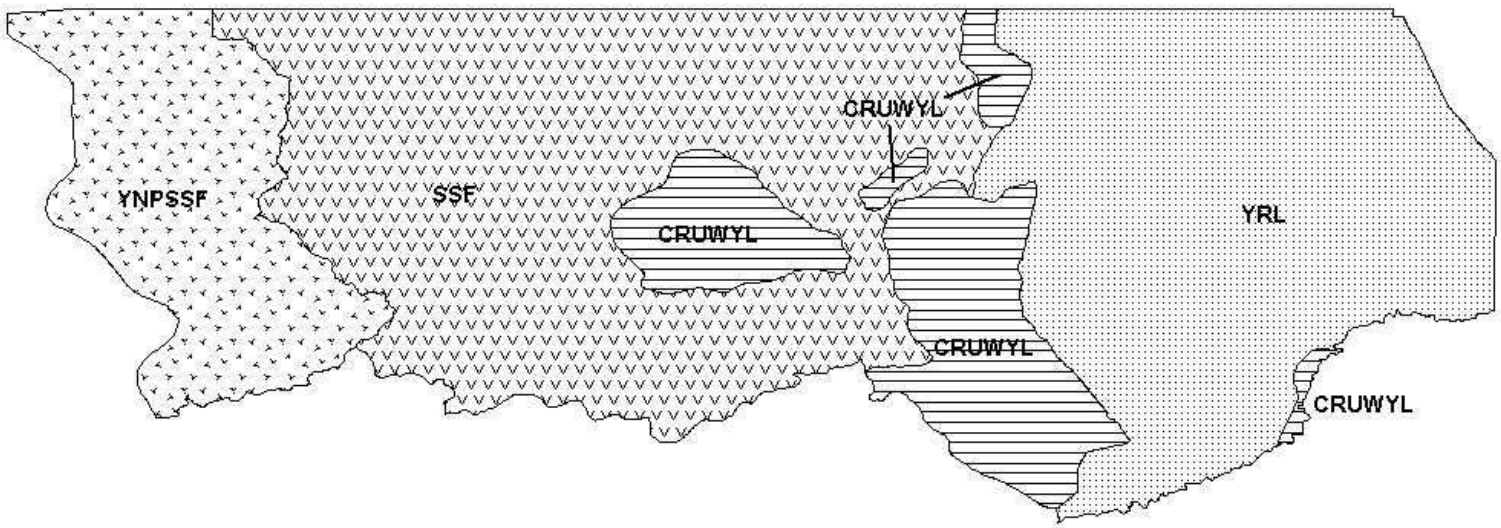




**Comments:**

## END




Mule Deer (MD216) - Clark's Fork
HA 105, 106, 109, 121
Revised - 2/94